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SAMUEL CABOT IN HIS RELATIONS TO THE INSTITUTE

Student of the Institute, 1866-70.

Elected member of the Corporation of the Institute, 1889.

Chairman of the Committee on the Departments of Chemistry and Chemical Engineering, 1892-1906.

Founder of the prizes for physical culture in 1905.

Died November, 1906.

Others, who knew Samuel Cabot longer than I, have spoken of his integrity and his high-mindedness in business relations and in social life. I came to know him and to love him out of his relation to the Institute,—a relation which had to do with its Corporation, with its Faculty, and with its students; and I venture to speak briefly of that part of his busy life and work.

I came to the Institute six years ago; and amongst the first men whom I grew to know intimately was Samuel Cabot, or—as we loved to call him—Sam Cabot. My intimacy with him came about because, as a student of the Institute and as a member of its Corporation, he had a hearty interest in all for which it stood and in all which it undertook to do. Any man who came as the President of the Institute was sure to come very quickly in contact

with a man whose interest and whose service to the Institute was so direct and so constant.

As Chairman of the Committee on the Departments of Chemistry and Chemical Engineering, he made of the committee an active agency for stimulating and helping the work of the Department. Visiting the Departments often, knowing personally the instructors, bringing them together at his house year by year, he knew the Department as few members of the Corporation know the Departments which they visit from year to year. It was this intelligent, faithful, devoted service which first drew me to him.

It was, however, I think, his interest in the student problem, in the human side of the relations of the Institute, which most attracted me. His sympathy for the man who lived in a small room, cut off from social intercourse, living on limited means, working intensely to finish his course, was so keen and so genuine that I felt the greatest encouragement in talking over with him plans for the betterment of student conditions. Into all these plans he entered most intelligently and most heartily, giving not only of his means, but of his strength and of his time and of his service. He was one of those whom Lowell describes as giving himself with his gift.

One of the immediate results of this interest was the gift to the Institute of his share of what is known as Cabot Field, the athletic field in Brookline which serves the purposes of exercise and of sport in our student life. This gift was a generous one in money, but it was still more generous in the attention and the care which he gave to it. But it had its greatest value from the ideal of sport and of play which he held up always before our students and our alumni, and which is voiced in the verse written by

F. Gelett Burgess ('87), and placed, at Mr. Cabot's suggestion, above the gate given last year by the class of 1881,—

Not the quarry, but the chase,
Not the laurel, but the race,
Not the hazard, but the play,
Make me, Lord, enjoy alway!

Through this genuine interest in the human problem which stands before the Institute, as it stands before all institutions of learning, Mr. Cabot was led into increasingly close associations with the students in their organizations and gatherings. I well remember the first time he went with me to an evening gathering and his half-humorous embarrassment at being called upon for a speech. I remember, with equal pleasure, as he went more and more frequently to such gatherings, how this shyness wore off, and he came to enjoy the chance to say a word, always brief and to the point, concerning the problems which confront the student in the day-by-day work. Any one who knows young men knows that this kind of thing can be done only by him who loves it, and who feels that real love for men which enables him to come into a relation with them. There are few men whom it has been my good fortune to know who shared in such measure as Samuel Cabot that true comradeship with young men which enabled him quickly to put himself in relation with them. They came to know him and to love him, as we in the administration had come to do; and, when the student body asked the privilege of coming to the last ceremony held over his body, the request was one which came out of a real affection for him.

I like to remember that the last talk I had with him had to do with another project for ministering in a help-

ful way to student needs,—a project which came entirely from his own initiative and from his direct interest in the work and the life of Technology.

As I look back over the six years of my intimacy with this friend, I realize that I have known few men whose lives show as beautifully as his showed that forgetfulness of self which blossoms into true service of men. Marcus Aurelius had a saying that there are three kinds of friends: one who does you a service and straightway charges it against you, that he may receive a return for it; a second friend, who does you a service, and who, while he does not charge it against you, nevertheless never forgets that he has done you a service; and, third, a friend who does you a service, and straightway goes ahead to do you another service, just as a vine having borne fruit goes on to bear other fruit. Samuel Cabot was one of the friends whom I have known who belonged to this third class; and in no other relation of his life has he shown this quality of friendship more effectively than in those relations which he had with the Institute of Technology,—relations which began as a student in 1866, and ended forty years later in the midst of a generous plan for helping other students.

HENRY S. PRITCHETT.

TALK TO FIRST-YEAR STUDENTS

DECEMBER 5, 1906

BY PROF. ARTHUR A. NOYES, CHAIRMAN OF THE FACULTY

At the request of the Dean, I am going to say a few words to you on behalf of the Faculty in regard to the importance of the so-called general studies in the courses of the Institute. And, in doing this, I shall try to impress upon you the importance of utilizing, as far as possible, not only these, but all other opportunities offered to you of developing yourselves upon other sides than the strictly professional one. It is a matter of extreme moment that you should acquire at the outset of your work here a true conception of the goal for which you are to strive and a correct understanding of the means by which it may be attained. You are not to become skilled artisans who have acquired only the technical methods of the industrial arts. If that be the aim of any one here, he should understand that his place is in a trade school, not in the Massachusetts Institute of Technology. You are to become the leaders on the scientific side in the development of the industries of this country. You are to become engineers, architects, or chemists in the highest sense,—not machinists, electricians, draughtsmen, or analysts. It is true that you must acquire the technique of your professions. The engineer must measure accurately, the architect must draw neatly and intelligibly, and the chemist must analyze with unerring certainty; yet these are incidental accomplishments, not the main qualities which you must acquire if you are to become leaders in your professions. A great difficulty in technological education arises from the

fact that so much time has to be devoted to the acquirement of technical methods and technical knowledge that the student is apt to come to regard this as the main purpose of his education. He does not see the woods because of the trees. First of all, then, you must resolve that you will be engineers, not artisans; leaders, not followers; originators, not executors; broad-minded men, not mere specialists. And you must adopt this resolution because, from a still broader point of view, it is your purpose to contribute to the progress of the world in as high a degree as your abilities and opportunities permit. It must be your aim to fulfil the function expressed in the closing words of the Institute poem recently written by one of our instructors:—

“Each man in his chosen place
Beats out on the anvil of human toil
The good of the human race.”

But, while it is fundamentally important that you keep before you this ideal, this is, of course, not alone sufficient. You must avail yourself of such opportunities as will lead to its realization; and it is of some of these, connected with your work at the Institute, that I want to speak.

I may first refer to the importance of approaching the so-called general studies—the courses in English composition, literature, history, politics, and in language—in such a spirit as will enable you to get the most out of them.

Remember, you are to be practical men of the world,—not workers in shops or laboratories, or even scholars closeted in their studies, like the monks of the Middle Ages,—and that you must acquire that breadth of view and breadth of knowledge which will enable you to be appreciated by those who have had a different training, and which will also

enable you to form a better estimate of the relative importance of the things of life, and to avoid the risk of getting the mental attitude of the trombone player who extolled one of the great operas of Wagner because it offered a fine opportunity for playing the trombone! You must be able, moreover, to write and speak well, if you are to make the results of your work effective, and are to secure adoption of your plans and ideas; but this is a power which is acquired only by much practice and by thorough familiarity with the best literature. Then you must be acquainted with those matters which form common subjects of conversation among educated people,—with the recent progress in literature, art, and general science, and with the political, social, and industrial questions of the day, which can be properly understood only through a knowledge of their recent history. It is the purpose of the general studies of the first three years and of the summer reading required between the first and second and second and third years to provide for this side of your education in as large measure as the time available will permit; and I urge you, on behalf of the Faculty, to regard these subjects as no less important than your strictly professional work, and to do your best to get out of them the broadening element which, when properly appreciated, they are sure to give. Even if from your present outlook these studies should not seem to you so well worth while, will you not accept in this the judgment of your professors, who, having devoted themselves primarily to science and engineering, would scarcely have a natural bias in favor of humanistic studies?

Another point with reference to your studies which should be emphasized is the importance of doing thorough work in the mathematics, physics, chemistry, and descriptive geometry courses of the first and second years; for

upon these sciences as a foundation the whole superstructure of the engineering professions rests, and unless your own foundation is a solid one, your structures can be only two or three story affairs. Without this you might later acquire the technical details of your profession; but you would be only rule-of-thumb engineers, who could imitate, but not initiate. Bear in mind, too, that even in your strictly professional work it is a knowledge of principles, not of the more concrete special methods, that is of most importance, and realize that any subject which has the title "theoretical" or "theory" attached to it is especially likely to be of practical value; for in science the term "theory" is not used, as in every-day language, in contrast with practice, but to indicate that the subject deals with principles rather than with specific facts. Special industrial applications and technical methods you will have no difficulty in grasping as soon as you enter the practice of your professions, provided you have acquired at the Institute the more fundamental knowledge of principles, and the power to apply it.

"Power to apply your knowledge,"—these words suggest that there is something more important than knowledge itself, even than of principles; namely, the acquirement of the power to make practical use of such knowledge as you possess. The question that will be asked in regard to each of you by your instructors and by the Faculty as you go on in your courses at the Institute, will be more and more, not, *What do you know?* but *What can you do?* It is this same question which a little later your employers will ask; and by the answer to it your success will be largely determined. How are you to acquire this power? Cramming subjects for examinations will not give it to you, for this, necessarily, consists in mere memorizing; and even the faithful learning of your daily lessons in school-boy fashion will not develop

it. You must not simply learn, you must *think*; so that you may fully understand and appreciate what you are learning. This takes more time and effort; but it is better, if necessary, to do only half the work understandingly than to learn the whole of it by rote. And you need have no fear but that the man who pursues the former method will far out-distance the one who follows the latter, both at the Institute and in his subsequent professional career. Especially would I mention the importance of thorough and independent work in the solution of problems, which form so large a feature of many of our Institute courses; for these form the very best means of developing mental power. To learn how to do problems from a teacher or fellow-student is to defeat their main purpose, which is to develop the power of solving any new problem,—not to teach how to do the special one in question.

I cannot close my remarks without adding that there are important duties to yourselves outside of the regular work within the Institute which must not be neglected. First of all, even though you may now have, in the prime of youth, "health that mocks the doctor's rules," yet it is one of the greatest mistakes that a young man can make to disregard the conditions essential to the maintenance of his health. I do not now refer especially to the avoidance of the common vices, for we all know that they are to be avoided; but I have rather in mind the more or less passive neglect to observe the ordinary rules of health,—to take meals regularly, to eat and sleep enough, and to take enough exercise and recreation. The student who neglects these things for the sake of his studies is misguided in his sense of duty; and the student who neglects them for the sake of his pleasures is guilty of a piece of folly not mitigated by any moral considerations. Both must pay for the neglect by future, if not by im-

mediate, impairment of their health, and, therefore, of their efficiency and capacity for enjoyment. The taking of exercise should be considered as much a matter of duty as eating or sleeping. I have long hoped that the students of the Institute might be the pioneers in the establishment of a rational system of athletics, one which would not merely draw into it the few already possessing high physical development, but one which would provide exercise appropriate to their strength for those who are least capable of competing, and who are on that account especially likely to neglect it.

Finally, I will refer briefly to the importance of cultivating social relations, especially among yourselves. There is no faculty of more value to the engineer than that of dealing easily and effectively with men, and it is one in which Institute graduates, at the outset at least, are often accused of being deficient. Work together, play together, eat together, exercise together, form societies together, especially for such purposes as increase your information and interest in non-professional matters,—only *don't loaf* together. The Institute life is, and ought to be, a strenuous one in the sense meant by President Roosevelt,—in the sense that no time is to be wasted in idleness or in unstimulating amusements, not at all in the sense that life here is to be all work and no play. Active pleasures are, I believe, a more potent factor than exercise itself in promoting both the mental and bodily health, which, as expressed by the motto of the Institute, *Mens sana in corpore sano*, must go hand in hand. Such pleasures are an almost necessary part of the activities that lead to ultimate success; but mental apathy and physical inertness have no place in the life of young men who aspire to become leaders in their professions. Follow the advice of Oliver Wendell Holmes:

"Shun such as lounge through afternoons and eves,
And on your dials write, Beware of thieves."

And do not forget the truth expressed by Longfellow, that

"The heights by great men reached and kept
Were not attained by sudden flight,
But they, while their companions slept,
Were toiling upward in the night."

ENGINEERING EDUCATION*

AN INFORMAL DISCUSSION AT THE ANNUAL CONVENTION OF THE
AMERICAN SOCIETY OF CIVIL ENGINEERS, JUNE 27, 1906

Subjects for Discussion: "What is the Best Preparatory Education for the Civil Engineering Profession?" "Is Technical Training the Best Education for Executive Work?"

GEORGE F. SWAIN, M. AM. Soc. C. E. (by letter).—Most people will admit to-day that civil engineering, like other branches of engineering, belongs to the learned professions, and should require a preliminary technical training corresponding generally to that necessary for the lawyer or the physician. There is much to be said for the old apprentice system of becoming an engineer, or for the method by which a young man enters an engineer's office after an ordinary public school education, and slowly works his way along, studying, as he learns, by doing, the practical details of the profession. Engineering is more—much more—common sense and "gumption" than it is science, and the school cannot make up for a lack of these qualities. Many of our best and most deservedly eminent engineers are men who, by force of character and perseverance, have worked themselves up in this way. Yet these men would probably be the first to acknowledge the great advantage which a proper technical education would have been to them, and they would not consider for a moment bringing up their sons in the way which they followed. Yet it is probable that they fail to realize the benefits which they derived from the stern discipline of actual life and from the necessity which they were under of making up for lack of opportunity by hard work and diligent application. The trouble with the young man, between the ages of sixteen and twenty-two, who is given the opportunity of a higher education, is that he fails to realize his opportunity, and does not take advantage of it; and, as a result, many of the graduates of technical schools and colleges have neither accurate knowledge of any one subject nor the ability to think clearly and

* Discussion from Proceedings Am. Soc. C. E., vol. xxxii. p. 517.

logically, nor the power of taking up a new subject and mastering its fundamental principles without assistance.

"I would set all the young men to work," said Socrates, "and send all the old men to school." And this, while of course impracticable, involves a deep and fundamental truth: namely, that we learn mostly by experience rather than by precept, and that only as we approach middle life do we awaken to the advantages of thorough training and accurate knowledge. Experience is the greatest of all teachers, but is an expensive one. The great difficulty that confronts the teacher is to awaken the student to a sense of his responsibility and his opportunity, to make him patient and even anxious of correction, and to make him see that the true object of his education is to train himself to accurate thinking, to high ideals, and to a proper balance of all his faculties, so that he may make of himself the best that is possible. As Dr. Munger has said, "Education is to teach us how to live, not how to make a living."

It is undoubtedly true, however, that most young men who go to a professional school with a proper sense of the opportunity, and embrace it earnestly, will get from the course what they could not, or at all events would not, get without it. But the technical school cannot make an engineer: it can only give the opportunity for the young man to acquire a training, an independence of mind, a character, which will make him first of all a man, and show him how to live, and further to acquire a familiarity with the fundamental principles of science, which he ought to know in order to be an intelligent engineer instead of a parrot, an imitator, a rule-of-thumb man. The degree does not and cannot make the engineer, though some schools apparently deceive themselves by thinking that it does. The school cannot even teach: it can only offer opportunities for a man to learn, for nothing is of real value in this world but what we gain by our own efforts. The college is not a restaurant, where young men come to be filled, but a gymnasium, where opportunities are offered for the development of all the faculties, not only mental, but physical and moral. It is self-evident that a development of this kind is the proper and necessary training for the highest success in any profession, and while such development can in some instances

be obtained independent of the school, yet a school which offers suitable opportunities ought to give what most men would not be apt to obtain if left to themselves. After all, we are creatures of habit, and habits acquired in early life, whether physical, mental, or moral, are apt to remain, and, if bad, are hard to eradicate. Hence the importance of acquiring proper habits of thought, as well as of action, as early as possible.

Assuming, then, as a fundamental proposition, that a technical education is the proper preparation for the civil engineering profession, and that few men have the character, the courage, and the perseverance to be able to develop themselves unaided, the question remains: What should be the character of that education, and how far should it go. We confront once more the old question, which so many able minds have discussed: "What knowledge is of most worth?" In considering this question with reference to engineering education, one must never forget that the aim here, as in all other education, should be first of all to make men. Engineering education must not be narrow, must not be confined to strictly professional subjects, but must be broad enough to develop the man on all sides. At the same time we must remember one of the fundamental principles of the modern education, which is that, of two subjects which will give equally good training, the more useful one should be chosen. There is no excuse, at the present day, for teaching subjects which will be of no possible use to a man in his professional or social relations, simply because they afford good mental training, when there are many useful subjects which, if properly taught, afford just as good or even better training. The interest of the student will lie with the subject for which he can see a use, and interest is a necessary factor in education. But even the useful subjects cannot all be taught in a technical course of the usual length or even in a college course followed by a professional course. Some selection must be made. And here it will be well to bear in mind that, as President Eliot once said, "The actual problem is not what to teach, but how to teach." We must not endeavor to teach everything which a man will need, but must make a judicious selection of subjects, and teach these thoroughly, in such a way that the stu-

dent will gain the power to take up and master new subjects by himself. And here is reached one of the fundamental and greatest defects of education at the present day. Too much attention is devoted to the question: What shall be taught? and too little, or sometimes almost none at all, to the question, how it should be taught. Much time is devoted to the arrangement of the curriculum, and then an important subject is assigned to a teacher who can neither interest the students nor make them understand it, or who, perhaps, instead of training them to think, and giving them in this way some power of doing things they have never done before, simply turns his classroom into a restaurant, and fills his pupils up with facts, the bearings of which they are unable to appreciate, and which they promptly forget. Comparatively little attention is paid to the appointment of teachers, it being assumed, apparently, that, if a man understands a subject, or appears to understand it, he can teach it to others. It is not made a requisite for the teacher's post that a man shall have been trained in pedagogics, that he shall know something of the theory and history of education, or of psychology. These things are neglected, and men are often appointed to high positions as teachers who have had no training in education, who have to learn that science as they would any other, and meanwhile at the expense of their pupils. Good teachers are extremely rare, and the faculty for teaching is a gift, perhaps to a greater extent than most faculties. With some men it is almost intuitive, and such men do not require much training. But with most men it has to be learned. Too many men teach because they could not succeed in practical business life, and, as a matter of fact, many of them cannot teach efficiently. Ask the best men in a class from any of our colleges or professional schools, and they will probably agree in telling you of important courses from which, through no fault of their own, they derived neither information nor training, nor inspiration. It is a great pity that the results of education cannot be quantitatively expressed, and shown at the end of the year, in a balance sheet, in dollars and cents; and, further, that trustees and faculties are not dependent for their income upon the results of such a balance sheet. To pursue this line of thought would carry us too far, but the writer's

advice, to the young man who wishes to study any subject whatever, is to go to the institution where there are the best teachers of that subject. Material equipment, laboratories, and so forth are of no consequence in comparison. Mark Hopkins at one end of a log and a student at the other make a university. The teachers of engineering should study, not only engineering, but teaching, and should study the latter more than the former. One of the most encouraging educational steps in recent years in America has been the formation of the Society for the Promotion of Engineering Education. The profession of teaching is one of the most important to the community, but it is not recognized as it ought to be, and it is not paid as it ought to be. Some universities even expect to obtain men competent to teach all branches of civil engineering and to occupy positions where they should be inspirers of young men to mental achievements and to high moral ideals, and all for \$1,200 a year. And even the American Society of Civil Engineers does its part, the writer regrets very much to say, to keep down and render unattractive the profession of teaching by refusing to recognize the work of a teacher in charge of a department of engineering as professional experience in charge of work. This society has preferred to recognize, as eligible to full membership, the man who has had a few years' experience in giving lines and grades for sewers, or superintending simple practical engineering works, in preference to the man who is in charge of an engineering department of a technical school, and devotes himself to teaching and inspiring the future members and leaders of the profession. In the writer's opinion, this society can do no better work, to raise the dignity of engineering teaching and of the engineering profession, than to remove this restriction from its constitution. It will gain much, and lose nothing, by recognizing experience in teaching as equal to experience in practice as a requisite for membership.

The curriculum of an engineering course should be almost entirely prescribed, with few optional or elective studies. The main opportunity for election should be between different lines of study, as for instance between civil engineering, mechanical engineering, electrical engineering, etc., but, the line or aim once chosen, the

course should be laid out by competent teachers, and should be prescribed. The idea that students should be obliged to undertake difficult and unpleasant tasks simply because they are difficult and unpleasant is happily outgrown, but life is full of such tasks, and one of the most useful results of a proper system of training is the ability to do drudgery and to attack and surmount difficult tasks cheerfully and successfully. One of the dangers of a too literal and extreme application of the elective system is that, improperly understood, it cultivates a tendency to shirk difficulties and a disposition to avoid unpleasant tasks.

One more point is to be considered. If the desirability of breadth and utility is granted, the question is whether they should be arrived at simultaneously or successively. It is held by many that they should be attained successively; that the public school or secondary school, which gives a boy his preparatory education, should be followed by the college, which gives him his broad general education, and this by the professional school, which gives him his technical education. This is the zone theory of education. The difficulty with this arrangement is that during his college course the student is working less earnestly and with a less definite aim in view than if he were pursuing a professional course from the beginning. Every institution of learning should be looked upon primarily as a place where young men and women go to do hard work; and it should be impossible for anybody to remain in the institution who does not come in this spirit and conform to this requirement. Healthful and wholesome amusements, recreation and exercises, should be a part of the training, but secondary to the main objects in view. A wrong attitude toward college work prevails to a great extent, not only among young men, but among their parents as well. It is unfortunately true that in most or at least in many colleges numbers of young men dawdle away their time, doing little or nothing except to cram for examinations; and that they emerge with little except a diploma and an enlarged cranium, and, perhaps, with a bad habit or two. This should be made impossible. The writer has never been connected with a college, but he knows from long experience how difficult it is to make even students in a professional school

awake to a due sense of their opportunities and of the proper relations of things; and it must be much more difficult in a college, where a larger proportion of students are browsing around without any definite aim, and having a good time incidentally, giving no serious consideration, before graduating, to the question of their future careers. If this view is correct, it would seem to follow that the student should be urged to select as early as possible his professional course, at least within broad limits, and that during his college course, if he takes one, he should lay out his studies with distinct reference to his future professional course. It would also seem that some non-technical subjects should be carried on, even in the professional school, so that interest in such studies should not be entirely lost. Change of occupation is rest, and studies of different kinds (as, for instance, history and mathematics) may each prove a recreation to a mind wearied with the other. Such an arrangement as has been outlined is really a continuous professional course from the beginning, in which the proportion of professional studies increases in each year: it allows the student to work always with a definite aim in view, and at the same time the proportion of technical work in the early years is not so great as to preclude a change of course if the student comes to feel, as he advances, that some other branch of professional work than the one first selected seems to be better fitted for his capacities.

Summing up the preceding discussion, the following are the principles which the writer would lay down in answer to the question which has been propounded:—

1. A technical education as given in our civil engineering schools is, if properly appreciated and made use of, the best preparation for the practice of the profession; and at the present day it is almost a necessity.
2. In laying out an engineering course, the aim should be, first of all, to develop broad-minded men, who can observe correctly, reason logically, express themselves in language and on paper,—men with imagination and with character and with good physical development.
3. Useful subjects of study, which admit and require training in

thinking, should be preferred to studies which are mere accomplishments.

4. Studies which involve discipline of the mind and observation should be preferred to those which merely give information.

5. Subject to the above restrictions, what is taught is not as important as how it is taught. The teaching profession should be better paid and made more attractive to able men.

6. The curriculum leading to any of the engineering professions should be almost entirely prescribed.

7. The choice of a profession should be made as early as practicable, and a continuous course should be arranged with that profession in view, from the beginning of the higher education. A course of five years, or perhaps of six years, either in one institution or in two, seems to be desirable for a thorough preparation.

8. The American Society of Civil Engineers should recognize the dignity of the teaching profession by making experience in teaching equal to experience in practice as a requirement for membership.

Passing now to a consideration of the question: "Is Technical Training the Best Education for Executive Work?" the writer's reply would depend upon the character of the technical training; that is, upon what is taught, and more especially upon how it is taught. It is a common criticism that graduates of technical schools are narrow, and that, while suited for subordinate positions, they are not so well qualified for high administrative positions as college men. The writer believes that, taken broadly, this criticism is unsound; that is to say, he does not believe that the average college man is better fitted for administrative work or is any broader than the average technical graduate. Nevertheless, he believes that there is much suggestiveness in the charge, and that the technical schools may profit by considering it. The number of college graduates is very much greater than the number of technical graduates, and probably a larger proportion of the latter are from humble homes, where they have been denied social advantages, and are lacking in polish, and perhaps in good manners. They have gone to the technical school because they knew that they would have to earn their own living, for which they were obliged to prepare themselves as

quickly as possible, and they have, by inheritance as well as by force of circumstances, a tendency to take an interest only in the practical professional work and to give little attention to acquiring breadth of interest or comprehensiveness of view. They have looked at everything from the professional standpoint and with a magnifying glass, and they lack the mobility of mind that would enable them to take in a problem or a condition in its entire scope or to appreciate all the various sides of a question. Such an attitude is not that of the successful administrator. The man who looks at a thing through a microscope sees more—but he also sees less—than the man who looks with the unaided eye; and the tendency in any detailed study of a scientific or technical problem is to concentrate so much attention on the details that the general relations are not perceived. The engineering student is constantly under this temptation, and, unless it is counteracted by good teaching, it may soon become a habit. Unfortunately, here again many teachers fail to do what they should, being narrow themselves or lacking in a knowledge of the large practical relations of the subjects which they teach. Engineering students constantly seem to the writer to be like men studying a book with a microscope, who can tell the details of each particular portion of the work, but who have failed to see what it was all about.

It is not apparent to the writer, however, that engineering studies are very different from other studies in a narrowing tendency. How many students of history, for instance, arrive at correct general conclusions or accurate ideas regarding the general tendencies of a period? Here, as in the study of science, there seems to be about equal opportunity for spending so much time upon detail that general relations are obscured.

A certain largeness of vision is essential for administrative work, but, in order to judge correctly as to the relative value of technical and general education as a preparation, we must not only consider what technical education can be and ought to be, but, instead of comparing college graduates with technical graduates, we must consider whether the same man would be better fitted by the college course or by the technical course. In doing this, the following are some of the elements to be considered:—

1. Most executive or administrative work has to do with engineering or involves engineering as an important element. Our railroads, mines, manufacturing establishments, etc., depend upon applied science; that is, upon some branch of engineering. A knowledge of engineering, therefore, if it is accompanied by breadth of view, largeness of conception, and the personal qualities necessary, must be of great advantage in rendering the administrative officer able to form his own opinions, and in enabling him to direct the energies of his staff in the directions most productive of efficiency, economy, and industrial development.

2. Scientific study certainly has the great moral advantage of training men to search for truth, to keep their minds open until a result is obtained, and to be satisfied with no makeshifts or evasions. Such an attitude of mind must be consonant with the highest kind of administration, however much it may conflict with the necessities of politics, graft, or deception, which seem to be the ruling elements in some executive positions.

3. Scientific study and the pursuit of truth for its own sake conduce to honesty, both of mind and of action, to frankness and fearlessness, and to uprightness of purpose. However narrow engineers may be, the writer believes that for these qualities just mentioned they are not excelled by the members of any other profession.

4. Technical training, and particularly technical experience in the handling of men, is clearly of advantage in any executive position.

After a consideration of these elements, the writer—while ready to admit the fact that many men technically trained lack the breadth of view and adaptability which is essential in executive work—believes nevertheless that technical training, if the course of study is properly laid out, with a proper proportion of liberalizing studies and pursued under teachers who direct the students always toward the larger view, is the best preparation for executive work.

NOTES ON STUDYING IN PARIS

The editors of the REVIEW have told me that it would be of some interest to the alumni to have a brief account of my last year's experience as a student in Paris.

When the year's leave of absence was granted me in August, 1905, President Pritchett suggested that it might be of benefit to the Institute instruction for me to familiarize myself with the methods of teaching Descriptive Geometry in the French technical schools, especially at the Beaux-Arts. Descriptive Geometry is essentially French in its origin, having been invented by Monge, one of the founders of the École Polytechnique in Paris, and this subject has always received special attention in mathematical and draughting instruction in all French schools.

At the Institute we require Descriptive Geometry of all our students. It has from the beginning been considered of great benefit in the elementary and preparatory training for our technical and scientific work, although it owes its position in our general first-year instruction more to its value in training the mind and imagination than because of its direct application to problems of draughting.

The school year in Paris begins the first week in November. Arriving in that city the last of August, I had plenty of opportunity for looking over the ground, meeting the professors, and arranging for attendance at lectures. I found the time ample for the registration problem, but all too short for the more important preparation in conversational French. It is extraordinary how suddenly a foreigner relapses from confidence to timidity when his interlocutor changes from a café waiter to a professor at the University. The conversational French with which he has met so boldly the exigencies of travel fails entirely when he tries to present abstract ideas to one who is as well or better informed on a subject than he himself.

A few weeks of such tentative talks as I was able to have with the mathematical professors soon put me in a most humble

frame of mind,—the proper attitude for the student. I obtained manuscript notes of the lectures at the Polytechnique, and all the text-books used in the different Lycées and in the École Centrale, and arranged, after a personal interview with M. Pillet of the Beaux-Arts, to attend his lectures in Descriptive Geometry with the regular students. M. Pillet, who has for so many years given instruction in this subject at the Beaux-Arts and at many other technical schools in France, is undoubtedly the most effective lecturer in any of the University schools. His attractive manner, his magnetic personality, make his lectures in this subject fascinating to all students. He has written several text-books, elementary and advanced, but they convey no idea of the power of the man to present his subject before an audience in an attractive and interesting way. M. Pillet is a draughtsman, and illustrates his talks every moment by chalk drawings on the board. Those who have seen Professor Morse, of Salem, illustrate his talks with blackboard drawings, can form some idea of the manner in which M. Pillet presents his problems in Descriptive Geometry to a mixed audience of artists and architects. He presents each problem as if he were for the first time discovering the geometrical principle which that problem involves, and his audience feels as if it were assisting at the discovery and invention of new mathematical laws.

These lectures of M. Pillet began at eight o'clock in the morning, which necessitated rising on the dark, wintry mornings at seven, and hurrying through cold, uncomfortable streets before daylight. The lecture-room had to be illuminated by gas in order that the black-board might be seen. No such thing as roll-call or attendance was ever taken; but, if one were five minutes late, he was obliged to stand, as it was impossible to get a seat after the beginning of the lecture.

Had I left France in the middle of the winter, I would have been much more enthusiastic over the method used there in teaching Descriptive Geometry than I now am. The results of examinations in this subject have shown that the ratio of the number of those who really acquired a knowledge of the subject to the whole audience is much less at the Beaux-Arts than it is with us. Theirs is a very

pleasant way in which to acquire information,—pleasant to both lecturer and listener; but it is the lecturer who has done the work, and not the listener, and the result is very disappointing from an educational standpoint. I learned that in general American students do not take this course of M. Pillet's, but resort to private tutoring in order to pass the examinations. To acquire a real knowledge of a subject, one must do the work himself with his own head and hands. There was a certain glamour over the whole subject when I first entered the classes, probably due to the fact that the surroundings were strange and interesting and the language foreign, which passed away with familiarity; and, although I learned much that I hope will be useful in the development of our own courses of instruction, I do not feel that a wholesale adoption of the French method would be beneficial to us.

Directly after my return I talked over with Professor Adams the work of last year at the Institute, and was able to compare very well the two systems of instruction, and I must confess that the Institute work did not suffer much by this comparison. I realized that active work had been going on during my absence, and that the new course, based soundly on many years' experience, was indeed better adapted to our needs than the courses which I had attended. This does not by any means imply that I think the time spent in foreign study wasted. Such comparisons of work may do much good in developing the critical faculty, and may act as a stimulus for the development of new ideas, even when there is little direct adoption of methods.

With regard to the opportunities in general for foreign students in France I would say that since 1896 there has been a great change in the attitude of the universities in regard to their admission. At the present time the conditions governing admission and the requirements for degrees are quite similar to those long prevailing in Germany. This change in the attitude of the French University is already evidenced by the number of foreign students attending advanced scientific and literary courses at the Sorbonne. There are in Paris many opportunities for advanced study that are unequalled in any other parts of the world, and it is not difficult for a graduate

of our colleges to obtain a Doctorate of the University (a special degree given to foreigners) after two years' study. I do not think that French engineering schools appeal to Americans so much as do the schools of Pure Science, Literature, Music, and Art. The expenses of two years' residence can be made much the same as those in a German university town. The fees are merely nominal until you publish your thesis and distribute the copies, and never amount to a sum serious enough to be especially provided for. The Doctorate of the University which foreigners receive is not a degree entitling them to practise their profession of teaching, or otherwise, in France, as does the other degree of the University; but it is all that a foreigner usually desires to obtain from advanced university study.

With regard to student life in Paris I may say that I think this subject has been too frequently written up by outside observers with an idea of presenting a picturesque rather than a true view of the actual conditions. Outside of the purely professional schools there are a great many foreigners, and last year the Russians were in the preponderance. Most of these students were extremely poor, and found it difficult to furnish the means for actual existence. They were helped to some extent by the Student Association and by individuals. One was almost reminded of mediæval times, when students and beggars were synonymous terms in Paris. The very cheap restaurants where many of these students take their meals are similar to the five and ten cent lunch counters of our own student neighborhoods. There is no such general fraternal feeling among the students as exists in our universities,—no such thing as class organizations to bind the men together,—and it is only when a body of them take particular offence at some remark of a professor that they are inspired to act in unison. Then their cries are loud enough to be heard in the surrounding streets. The only students who seem really to enjoy their companionship and life together are the students of the Beaux-Arts. These are painters, sculptors, and architects; and, as they do their work in studios under a chosen master, they become intimately acquainted, and form very pleasant and lasting friendships. Allowance must be made for these observations, as they are necessarily superficial.

To one studiously inclined Paris affords wonderful opportunities during the winter for attending lectures by the most celebrated professors, without any charge or formality. At the Collège de France and the Sorbonne open lectures are given during every hour of the day by the most distinguished men on their faculties. While in Paris I met several American gentlemen who, without any pretence of being students and without even registering their names at any bureau, were attending four and five lectures daily at different universities, keeping this up for months. This free-lecture system can but remind a Bostonian of the Lowell Institute.

As a mere matter of experience in Paris, I will state that I had an opportunity to attend a session of the French Academy when a new Immortal read the eulogy of his predecessor, and was received into the ranks of this distinguished body. Far more interesting, however, than the address of this man, whose fame was not so wide-spread as that of many, was the sight of some of the well-known authors in their coats embroidered with palms. It was interesting to have M. Anatole France, Victorien Sardou, Francois Coppée, and others pointed out.

The public examination of the candidates for the degrees of Doctor of Law, of Letters, and of Medicine, were also interesting. And it was entertaining and instructive to listen to a series of lectures on the "Probleme Nègre des Etats-Unis" at the Bureau of Anthropology.

I lived during the year in a *pension* in the centre of the Latin Quarter,—a *pension* which was really the remnant of one of the mediæval colleges. I associated with many American students, and became as nearly a student myself as one is likely to become who has held the rôle of professor for twenty years.

In June, at the invitation of President Pritchett, I attended as delegate the fiftieth jubilee meeting of the great Society of German Engineers at Berlin. There were about two thousand people present at the general banquet. This German engineering society embraces all classes of engineers,—civil, mechanical, electrical, mining, etc.,—and is probably the largest society of this character in the world. The meeting lasted about two weeks, papers being read in the morn-

ings and excursions taken in the afternoons. There was a Grand Opera night especially for the society, and a celebration with fireworks at the Halenzee Garden, where some ten thousand or more were present. A visit paid to the Charlottenburg Engineering School gave me a chance for comparison with the French schools, and I must say that the equipment at Charlottenburg surpassed anything seen in Paris, and the general plan of education appealed to me as decidedly more practical.

In conclusion I may say that in my opinion American students are now welcomed to all European universities more cordially than ever before, and that our degrees are being more generally recognized as entitling the owner to educational privileges. Surely a year or two of residence in France or Germany will be found most profitable and enjoyable to any graduate who can afford the time.

ALFRED E. BURTON.

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ADDRESS BY WILLIAM WHITMAN
AT A BANQUET IN HONOR OF SIR WILLIAM
HENRY PERKIN

(ALGONQUIN CLUB, BOSTON, OCT. 10, 1906)

*Mr. Toastmaster and Gentlemen,—*I feel deeply the honor of your Committee's invitation to say a few words to you at this time on behalf of the manufacturers of this Commonwealth, those who represent commercial interests, those who consume the products of that great industry which owes its marvellous growth to the life-work of our distinguished guest. I shall be brief.

You know Sir William's contribution to society, and you are aware of his reward. The manufacturers of the world, and we of this Commonwealth, owe him a debt which time cannot outlaw. The nations pay him tribute. There is no discordant note in the universal psalm of praise that must sound so pleasantly to his ears, the love and gratitude of his fellow-men.

The spirit of genius that inspired our distinguished guest in his work is the attendant spirit of our print works, our dye-houses, our chemical works, all kindred industries, and also of our seats of learning with their extensive laboratories of research. It is the spirit of development that will watch over the progress of his great work,—the spirit that has led man to adapt his new ideas to the physical resources of life for his comfort and his general welfare.

In studying this spirit, I have turned to Sir William's writings. Certain brief expressions linger in my mind, and they furnish a theme. In commenting on the industry which he originated, he says:—

There is one feature connected with this industry and its great development which is of interest, and that is the immense amount of employment it has created for men of all classes, and, of course, especially for the working classes. When one considers its ramifications and its influence on other industries, it is difficult to gauge this, but it is often a very pleasant thought to me....

In another instance he says of himself and his associates,—

The net result of our work should be the benefit of mankind.

And again he says with reference to the coal-tar color industry:—

The origin and foundation was the outcome of scientific research, and also its development has been due to research, hence its unique character and marvellous growth, the fruit of the union of science and industry. When I was young, it was thought quite *infra dig.* for a scientific man to associate himself with industry. The possibility of becoming a manufacturer, owing to the discovery of Mauve made me feel this very much. . . . The union of science and industry has had most beneficial results, because they have been handmaids to each other in the most remarkable way, chemical science having made progress it never would have made without the aid of this industry.

Much of the man is revealed in these words. They abound with philanthropy and a noble purpose, but, as I read them, I forget the man and become filled with the ideas which his words suggest.

We note that the wonderful growth of that industry which its originator has said should have as its net result the benefit of mankind was due to the union of science and industry,—scientific research with its discoveries and development of new ideas and industry with its application of those ideas to material things for the benefit of mankind. And, then, we note that the man who tells us these things was disturbed in his youth by the opinion prevalent in England that it was quite beneath a scientific man's dignity to be associated with industry.

It is here, gentlemen, that I find my theme, for there is borne to our ears to-day a cry against "commercialism," against commercial men, the men governing great industries which have, in my opinion, as their net result the benefit of mankind. The cry is like an echo of that similar cry in England that disturbed our distinguished guest.

Our scientific men, our men of learning, our preachers, and many other educated and intellectual men have expressed their fear of what they believe to be a great danger of modern times. This danger they have been pleased to call "commercialism." Recent

unhappy revelations have increased their laments, until the word "commercialism" is used as a term of reproach and as tainting or corrupting the body politic.

Throughout history those men who may be associated in our minds with the word "science" have won greater regard than those engaged in industry, whatever their relative contribution to the world's advance. Ought this to be so? Is there any good reason for supposing that the development of a new idea, for example, is a greater contribution to the world's progress than the application of that idea to the material comforts of man, so that it will inure to the benefit of a whole community? Is the inventor a greater benefactor than the man who places the resultant benefits of the invention at the disposal of the many? It is, of course, impossible to answer these questions. The human mind cannot measure a man's contribution to the common good. Yet, certainly, each should receive his share of the world's regard. There should be no prejudice created in the popular mind against the men of commerce.

At this point it may be well to ask, What is commercialism? What is the spirit of commercialism which is so criticised to-day? If we turn to the books, we find the word "commercialism" tersely defined as "the commercial spirit or method"; "the methods and strict business principles of men engaged in commerce," or, in other words, engaged in the interchange of the commodities of the world.

The spirit of commercialism is a noble spirit, which finds its true expression in those simple words, "Do unto others as you would be done by." The teachings of business men throughout the world have been based upon fairness and honesty. The *great* work of the business world has been, and always will be, done upon honor and integrity. The universal teaching of all nations leads men to condemn those who are not honest and fair in their dealings with their fellow-men. The true spirit of commercialism should ennoble, and not degrade, and those men who are called "commercial," who adapt new ideas to physical things for the material comfort of mankind, are performing a noble office, as noble, I believe, as those more learned and scholarly men who create these new ideas. An invention by itself may do little good, but the application of that invention to

increase the resources and facilities of man may change a whole nation. In an address on the "Commercial Value of Ideas and Physical Facts" by the late Chauncy Smith, I find these words:—

And though men engage in commerce for gain, and not as a benevolent employment, yet any commercial man who cherishes an honorable pride, as he should, in the dignity of his profession, and in what it does for the world, may felicitate himself upon the undoubted fact that commerce, in ministering to the wants of men in the darkest parts of the earth and stimulating their desires for what civilization can furnish, is doing more for their advancement than all the benevolent and missionary enterprises of the age.

I should be happier in quoting this if the last lines read "is doing perhaps as much for their advancement as the benevolent and missionary enterprises." We cannot say that they are doing more. The commercial man and the theorist each has his place, each performs his work, and the two by their combined efforts benefit the world. No prejudice should belittle the contribution of either one. The idea that commercial men are actuated more than others by selfish motives is an erroneous one. It is human nature for every individual to toil for his own interest. Without the stimulus of self-advance there would be no progress. The man of science, the man of learning, and the man of commerce all seek an advance, but they seek their reward in different forms.

To-night we have as our guest a man whose point of view it will be well for all to adopt, a man of theory and of practice, a man who realizes that the benefit of his life-work has been the fruit of the "union of science and industry," and who, undoubtedly, believes that the man of commerce and of industrial affairs is entitled to full credit for the part he has played in the development of a great work.

In closing, I may say that, if I doubted for a moment the true spirit of commercialism, I should struggle with that doubt, and try to believe that honesty is the best policy, and that fair dealing is the basis of all our commerce.

When Mr. Garfield was nearing his death, at his request he was placed where he could gaze quietly out over the ocean. In writing of him, our great statesman, Mr. James G. Blaine, concludes with this wonderful thought,—

Let us believe that in the silence of the receding world he heard the great waves breaking on a farther shore, and felt already upon his wasted brow the breath of the eternal morning.

What a world of happiness is expressed in the few words, "Let us believe"! And I, at this point, find myself happy in saying to all commercial men, Let us believe that the true spirit of commercialism is based upon honesty and fair dealing, and the ancient tradition that we should do unto others as we would be done by, and that that spirit is a noble spirit which should be spoken of with reverence, and not with scorn.

SHIPBUILDING AND EDUCATION

VACATION JOTTINGS

Certain items that stand out in the memory of last summer's visit to Great Britain and the Continent will be jotted down here, with the hope that they will be found interesting to the readers of the REVIEW; formal reports of certain investigations can be found in the *Quarterly*, if any one cares to look for them.

The objects of the visit were to see shipyards, experimental model stations and colleges where naval architecture is taught. Beginning with the last item, it may be noted that British naval constructors are educated at a governmental college at Greenwich, and that French constructors are educated at a governmental school in Paris. Both are restricted in numbers, and admission is now limited to citizens of the respective countries, except that a few Japanese are educated at Greenwich. Formerly admission was more liberal, and some of the leading American naval architects, both in and out of the navy, were educated at these schools. The German naval constructors get their education at the Technische Hochschule at Charlottenburg or at a new school at Dantzig. The courses at these schools are open to all, and a graduate from the course of naval architecture takes his chance at a governmental position, if he chooses.

The English Royal Naval College is beautifully situated in the Greenwich Naval Hospital Buildings, which were one of the royal palaces in the time of Elizabeth. Any meddling with the old buildings (designed by Sir Christopher Wren) is properly considered to be sacrilege, and so, when they recently installed an engineering laboratory, it was put in the old fives court behind the original facade. The laboratory, though small, is to be first-class. The college is of the highest rank,—perhaps a little conservative, and with an abstract mathematical bias; but, if so, the new Director of Education to the Admiralty will know how to find a remedy. In passing, it may be noted that after the Admiralty had decided to reform their entire

educational system they chose a leading engineering educator, Professor J. A. Ewing, of Cambridge University, and have given him a free hand. The English certainly are practical in their ways.

The French school for naval constructors is lodged in a handsome old residence on Boulevard Montparnasse. It might afford somewhat restricted accommodations, were it not that the numbers are small and form only two classes, which are drawn from the École Polytechnique at the end of the two years' course there. They have recently set up shops for teaching hand-tool work in the old carriage house. A notable thing in this course is that there is only one lecture in a day, but that it is two to three hours long. One cannot withhold his admiration for the endurance of both professors and students. The approved French method of lithographing lecture notes is in force, and the notes were offered liberally to the writer. It is from this school, or in connection with it, that the greater part of the superb French literature on naval architecture and ship-building has been produced.

At the Technische Hochschule at Charlottenburg there is a grand course for naval architects and marine engineers, with six professors, several lecturers, and three hundred students. Even with the German system, which appears well calculated to discourage graduation, there are twenty or thirty graduates from this department yearly. Two of the professors are naval constructors detailed to teach warship design. A recommended course of study requires four years' residence (at this or some other high school), and a candidate for the diploma must have worked a year in shipyards or engine works. An enormous amount of ship-drawing is required and considerable marine engine drawing from the naval architects. For marine engineers the weight of the work is shifted to engine drawing. Finally, the thesis consists of the design of a ship in great detail, or of the machinery from the marine engineer. Many drawings seen were in pencil only, preserved assiduously from being soiled.

The large number of students has demanded an elaborate system of assigning and controlling problems that recalled methods of our engineering laboratories. These technical high schools having the

rank of universities have inherited certain university traditions, including academic freedom, so that each teacher may teach what and how he likes and each student may learn or not, as he pleases. There is, however, in fact, a very complete control by the Faculty of the recommended course, and no man who has been at a technical school need have it explained to him that the sequence of studies in such a course is practically automatic in its control of student work. Though no student is forced to take the recommended course, it is easy to believe that no candidate for the diploma wanders far from it. Having in mind our inviolable rule of 720 hours a term, which our Secretary administers remorselessly, a natural inquiry was, How many hours a day do these German students work? Such a question was declared unanswerable,—each student did as he chose; but the attorneys' device of narrowing upper and lower limits elicited the information that eight hours a day would be about right. Thus is the opinion of our own Faculty vindicated.

The Scottish universities have very short terms, that of the University of Glasgow lasting from the 20th of October to the 20th of March, so that a visit during term time was impossible. A notable matter is that this arrangement permits students to follow the custom of pupilage or apprenticeship in engineering offices or works. Certain firms near Glasgow co-operate in this matter, counting time in college toward the apprenticeship, and in some cases giving financial assistance. This university was the first to establish a course in naval architecture not under governmental control. The policy from the beginning has been to place the department in the hands of a successful practising naval architect. As a matter of fact, all incumbents of the chair of naval architecture have been graduates of the college at Greenwich. There appears to be growing complaint that the private practice tends to become more exigent in its demands.

A very well-established course in naval architecture was found at the Armstrong College at Newcastle-on-Tyne, the instruction having been given thus far by a lecturer. Recently a guarantee fund of £800 for five years has been raised, to secure as a professor some well-known naval architect, and what was in effect an advertisement for such a person was issued. This method, which sounds strange

to an American ear, appears to be well established in Scotland, and surprise was expressed that it might be considered *infra dig.* to apply in answer to an advertisement. Another technical college advertised two or three years ago for a professor of natural philosophy, and had eleven answers,—all from men who would have been available. But, when they advertised for a secretary and director (a man uniting some of the duties of the president and of a secretary of an American college), there were three hundred replies; which shows that a man may know the limitations of his training, but seldom doubts his judgment.

One of the most interesting features of the trip was the opportunity to see stations for towing ship models such as we have at Washington. This method of investigation was initiated by Mr. William Froude, who had previously investigated the probable rolling of the "Great Eastern" by aid of models. The first experimental tank was established by him for the Admiralty about 1872, and a later one at Haslar in 1886. Here have been made the famous investigations by Mr. Froude and his son, Mr. R. E. Froude, the present scientific expert to the Admiralty. Professor Ewing, who had visited the Institute the year before while investigating educational methods in America, very kindly gave me introduction to the chief constructor, Sir Philip Watts, through whose influence an engagement was arranged for me to meet Mr. Froude at Haslar. The day at that station, seeing the arrangements for making and towing models, for testing propellers, and for making waves and investigating their effects on the models, and talking in a familiar manner with the leading exponent of the method concerning all the interesting questions relating to it, would have been well worth a trip across the Atlantic. The technical aspect of this matter is treated in an article in the current number of the *Quarterly*, so that there is less excuse for prolixity here. The first impression and the last impression of the station itself was the admirably practical adaptation of the means to the end. Nothing was lacking that could add to the convenience and certainty of the work of the station, but nothing was done for the sake of appearances. A notable feature was the extent to which wood entered into the construction of the

carriage and the measuring and recording devices, and in all cases with the evident intention of securing lightness and stiffness. An apparatus was in place which was intended to make trochoidal waves. In use it has been found to make irrotational waves, which have the peculiarity that crests begin to break at the angle of 120° . All the models are made of paraffine hardened by beeswax, as is the practice at all European stations. The opinion was expressed that this material is desirable only where high temperatures cannot be expected. At the Italian tank at Spezia they said they had no difficulty with temperature, but that the length should not exceed twelve feet, and at Berlin models are made twenty-one feet long. It may be mentioned that at Washington models are made of wood, and are about twenty feet long, paraffine having been rejected on account of its weakness and liability to deformation in hot weather. Wood has other advantages, and it has been found desirable to store all important models, which could not be conveniently done if they were made of paraffine. Similar stations were seen at Spezia, Berlin, Bremerhaven, at John Brown & Co's. yard on the Clyde, and at the Leven Shipyard at Dumbarton. Each had features of interest, but, in general, they were of a technical nature, and, further, all were more or less direct copies of the Admiralty tank. The tank at Dumbarton, belonging to William Denny & Bros., has, however, special interest in that it has been in continuous use for twenty-two years, and a member of the firm said that, if they had another, they would keep it busy also. He further gave the opinion that every important yard should have its own tank, but that there are matters of general scientific interest that could be best treated at an open station that should not be hampered by governmental secrecy or by trade jealousy. This point was emphasized by the fact that a recent station is even now building up a necessary series of data which exists at every well-established station, but is locked up in archives or private records. One such station is now in operation in America, at the University of Michigan, and is described in a paper recently read before the Society of Naval Architects and Marine Engineers. One cannot avoid the question why the Institute should not lead in this matter, as in all other lines of scientific investigation.

A large number of dockyards and shipyards were visited, but attention will be directed only to a few salient features. For example, the "Dreadnought" was seen in dock at Portsmouth, but there was no invitation to go aboard, nor was there any lengthy description offered. This ship was launched four months after the keel was laid, and has completed her trials within the year; and yet the building slip shows no special arrangements for facilitating work. It was a case of employing all the men that could work without interference, and of seeing that no delay should arise. At private yards two cruisers were seen at a distance, for which the only information offered was that they must not tell for whom they were building. Now it appears that they, and one more of the same class, are cruiser battleships faster than any large ships afloat, and only less powerful than the "Dreadnought."

A peculiar feature was seen at Toulon, on the Mediterranean, and at Stettin, on the Baltic; namely, building slips were excavated at the lower end below the water level, and gates were provided to exclude the water during building, so that the ship was in effect built partly in dock and partly above ground. The wet end was in some cases used for docking small craft. Both seas, it will be remembered, are free from tides. The noted yard of Anseldo-Armstrong, near Genoa, where was built the "Cristobal Colon," which was beached and cast away near Santiago, has its water front on the open bay, and ships are launched on a temporary foreslip over the beach. A notable feature at all the Italian yards was the location of machinery in the open through the yard, more especially now that electric transmission of power is widely used. The climate, of course, favors this arrangement. Rather curiously, a similar tendency was noted on the Baltic, with the addition of a galvanized iron shelter; but even on the Baltic they do not have the semi-arctic winter of New England.

The German yards visited are of recent construction, with the most approved arrangements for transportation of material and machinery. They make one think of the new American yards, both countries having the advantage of starting with a free field. But the questions of general arrangement of transportation of material in the yard are

far from settled, there being no two yards in existence that are quite alike, though for that matter location and type of construction must always have a determining influence. At one of the most progressive yards, after a member of the firm had shown everything else, the question was raised concerning transportation of material, for that yard lacked the towering structures by which one can commonly locate a shipyard in the distance. With a laugh he said that he was not in the habit of saying anything on that question unless asked. Then he proceeded to explain a most complete and carefully devised method fitted to their method of construction, the two having been developed together and being exact counterparts. Further inquiry discovered the same method in another important yard, with modifications to suit conditions.

One of the most interesting yards was that at which a particular type of cargo vessel is built, or perhaps we may say manufactured, for they are all very nearly alike, and all features of the establishment are developed on the factory system. They build just twenty-four ships a year. They have commonly just two ships fitting out at the dock. When visited, the engine shop had six engines from the same drawings in process of erection, and six more were in the shop. No hesitation is shown in scrapping a tool, if a better can be found to replace it. It was said that it was necessary to import American machinery tools to start the British tool-makers out of the old ruts, but that British-made tools are preferred when the right kind can be had, because they are stiffer.

One of the most recent features is the introduction of converter gas for heating furnaces and for power. Two important shipyards on the Clyde—namely, John Brown & Co. and William Beardmore & Co.—depend entirely on the use of this gas. Now it appears that a critical feature of the system is the production of ammonium sulphate as a by-product, which can be sold so as to reduce by half the cost of the coal used; that is, from six shillings to three shillings per ton. And thus is a new bond of interest brought about between navigation and agriculture.

The new giant Cunarders were seen under construction at the yards of Swan & Hunter and of John Brown & Co., and the steam tur-

bine shops of the latter company. Seeing the turbines in the machine shop, one realizes that it is the modern development of large and accurate machine tools that makes them possible. Clearances are calculated in thousandths of an inch, while it is to be remembered that Watt thought he had made a real advance when he had reduced the inequalities of his cylinder to the thickness of a shilling. Steam turbine builders predict that a few years will reduce the marine engine to a museum curiosity; but meanwhile the internal combustion engine is even now building that is to contest the field with the turbine.

C. H. PEABODY, '77.

THE INCOME FUND

REPORT OF THE COMMITTEE, PRESENTED AT THE ANNUAL MEETING
OF THE ALUMNI ASSOCIATION, JAN. 18, 1907

The total subscription to the Income Fund to date is \$281,047.10, pledged by 1,698 subscribers. The amount due as first instalment of the fund is \$70,032.91,—an amount somewhat larger than one-fifth of the total subscription, because of pledges made by some for a single payment only, and because others who pledged a certain sum annually for five years have preferred to make a single payment covering their entire subscription.

Of this amount of \$70,032.91 now due, we have received \$60,916.41, leaving yet unpaid \$9,116.50. This sum is due from 299 subscribers, but 69 of these men, having pledged \$2,366, have either written us, asking for the privilege of delaying this payment because of business or other reasons, or have in other ways signified their intention of paying at a later date, leaving 230 subscribers pledging \$6,750.50 from whom we have not directly heard. The reasons for this non-payment are doubtless many. Business reverses may account for some of the delinquents, pure negligence is no doubt the cause in other cases, while many feel that the affairs of the Institute are unsettled as to its policy and future, and are unwilling to give until the uncertainty is removed. The Committee believes that the latter class are defeating their own desires, and that, if they became more intimately acquainted with the status of affairs and the earnest co-operation which exists among the Corporation, Faculty, and alumni to solve our problems, they would recognize the need for all to pull together at the present time and help mould the future to their mind.

The delinquents are divided among the classes:—

19	1868-1880
36	1880-1890
242	1890-1906
2	Not former students

The sums due from the classes of '68, '70, '71, '79, and '80, have been paid in full.

A number of subscribers have made a second payment on their pledges, and the amount thus received is \$3,005. Interest on the funds in the hands of the treasurer of the committee, less collection charges on foreign checks, amounts to \$712.91.

In addition to the sum received from the subscribers to the fund, friends interested in its success have made gifts for the work of the campaign, amounting to \$1,124.50, so that our total receipts for fund work have been \$65,758.82.

Of the amount we have received, \$59,734.32 has been handed to Mr. Wigglesworth as treasurer of the Technology Fund Committee. \$5,396.91 was expended in the campaign for subscriptions, this amount covering the labor, printing, postage, and general expense of our work. \$516.45 is the cost to date of collecting the first instalment of the fund, and \$111.14 remains in our hands for current expenses.

In the report of Mr. Wigglesworth for the past year, as Treasurer of the Institute, the amount received from the Income Fund is stated to be \$42,583.61. It should be noted that this report is of the date of October 1, and therefore does not correspond with the amount collected as stated above, much of which was received after that date. In fact, the Institute has now received from the fund \$53,229.11, leaving in Mr. Wigglesworth's hands, as Treasurer of the fund, \$6,140.71, which he has not as yet been authorized to transfer to the Institute treasury.

In October last the Alumni Association assumed control of our office, expanding it into an alumni headquarters, and assuming, among other duties, the clerical work which the continuation of the work of the Income Fund Committee will entail. While our work has been in progress, the clerical force and office facilities of the Fund have been used by the Alumni Association and various class organizations for the addressing and mailing of circulars and notices. For this work a charge has been made, covering the actual cost, and the amount so charged was \$1,293.49, for which we have received payment in full.

The Income Fund

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These accounts are given below in a more compact form:—

Receipts

Gifts for especial work of the Income Fund Committee	\$1,124.50
Payments from the Alumni Association, Class Secretaries, and others, for work done	1,293.49
* Payments from subscribers	63,921.41
Interest on bank deposit, less collection charges	<u>712.91</u>
	\$67,052.31

* We have also received 4 \$100 shares Beacon Hill Trust.

Expenditures

Amount turned over to Mr. Wigglesworth, Treasurer, and interest	\$59,734.32
Amount expended for work for Alumni Association, Class Secretaries, and others	1,293.49
Cost of campaign for subscriptions:—	
Labor	\$2,271.55
Postage	1,513.89
Printing	1,104.84
Miscellaneous expenses	<u>506.63</u>
	5,396.91
Cost of collecting the fund:—	
Labor	\$419.95
Postage	67.20
Printing	<u>29.30</u>
	516.45
Amount in the hands of the committee for current expense	<u>111.14</u>
	\$67,052.31

The Committee wishes to express its cordial appreciation of the assistance of many men in its campaign and its sincere thanks to the subscribers for their hearty response to its efforts.

EDWARD G. THOMAS, *Secretary.*

GENERAL INSTITUTE NEWS

CORPORATION NOTES

A stated meeting of the Corporation was held on Dec. 12, 1906, the main purpose being to hear the annual reports of the President and Treasurer, extracts from which appear on page 51.

The special committee on nominations having brought in the name of Mr. Frederick W. Wood, '77, a term member, to fill the vacancy on the Executive Committee made by the resignation of Mr. Howard Stockton, Mr. Wood was unanimously elected to serve until the expiration of Mr. Stockton's term. The revised by-laws, having been submitted in print to all members of the Corporation, were unanimously adopted after discussion and with some further minor amendment. Upon motion of one of the term members a vote was passed to the effect that abstracts of the proceedings of the Executive Committee be sent to all members of the Corporation in advance of the regular meetings.

The special committee on site, which was expected to report at this meeting, asked for further time.

BEQUEST FROM MR. CHARLES MERRIAM

In the will of Charles Merriam, of Boston, who had been a member of the Corporation for a number of years, public bequests were made amounting in all to almost \$70,000. The largest is a bequest of \$25,000 to the Massachusetts Institute of Technology, while smaller bequests are made to hospitals, churches, and religious associations and charitable institutions of many kinds, especially those dealing with children and institutions which carry on an educational work for boys.

REPORT OF THE COMMITTEE ON THE RETIREMENT OF DR. TYLER
AS SECRETARY OF THE FACULTY

[Adopted by a Unanimous Vote of the Faculty, December, 1906.]

The Faculty of the Massachusetts Institute of Technology, having received and accepted with profound regret the resignation

of Professor Harry W. Tyler as its Secretary, after occupying that office for the past fifteen years, desires to put on record an expression of its hearty appreciation of his work during that time.

In the preparation of business for Faculty meetings, in the supervision of student records for Faculty consideration, in the oversight of entrance examinations, in his large share of the most important and most varied committee duties, in his organization and development of the administration of the Secretary's office, in responding to the countless demands incident to the office of Secretary, Dr. Tyler in each and every respect exhibited painstaking care, minute and accurate knowledge, rare judgment and wisdom, and exceptional executive ability.

As professor and head of the Department of Mathematics, his influence has been no less notable. Our own courses of mathematical instruction he has rearranged and improved. He has strengthened the department through the new appointments from time to time, and through the regular holding of conferences for discussion and mutual helpfulness. Outside the Institute he has been prominent in the functions of the College Entrance Examination Board, in establishing and carrying on the Association of Mathematical Teachers of New England, and in the work of the American Mathematical Society, preparing for this society the report on entrance requirements in mathematics, which was adopted by the society and by a large number of colleges. In these various ways Dr. Tyler has contributed most effectively to the improvement in mathematical instruction throughout the country.

The Faculty of the Massachusetts Institute of Technology, therefore, in Faculty meeting assembled, enters upon its records this testimonial to the unusually efficient labors of Dr. Tyler. In the performance of his duties as Secretary he acquired a remarkable knowledge and grasp of even the minutest details, and a no less broad comprehension and sympathetic appreciation of large problems and general policies. Aided by a wonderful memory and guided by long experience, Dr. Tyler was able to settle student questions with facility and correctness, while he equally brought

to the members of the Faculty most helpful assistance in the solution of their own special difficulties. His tact, his wisdom, his sane judgment, his untiring industry, his breadth of view, his absolute and unselfish devotion to the Massachusetts Institute of Technology, rendered Dr. Tyler's services as Secretary not only invaluable, but also, so nearly as is ever humanly possible, indispensable and incapable of fulfilment by any other single individual.

ROBERT H. RICHARDS.

CHARLES R. CROSS.

CHARLES F. A. CURRIER.

FREDERICK S. WOODS.

CATALOGUE

The Catalogue for the present year was issued on December 1. The changes from the edition of last year are not numerous, and most of them have already been mentioned in previous numbers of the REVIEW. Two new alumni organizations appear for the first time, the Technology Club of Minnesota and the Technology Club of Cleveland. The total number of graduates of the Institute is now 3,670. The total number of students in the Institute is 1,397, classified as follows: candidates for the degree of Doctor of Philosophy, 10; candidates for the degree of Master of Science, 18; fellows, 7; graduate students, 18; regular students, fourth year, 178; third year, 194; second year, 169; first year, 272; special students, 552.

NOTES

Since the middle of December President Pritchett has been confined to his home in New York by an attack of typhoid fever. He is now convalescent, and expects to return to Boston before the end of January.

At the autumn meeting of the National Academy of Sciences, held November 20, 21, and 22, in the new buildings of the Harvard Medical School, Professor A. A. Noyes read a paper on "The Conductivity, Ionization, and Hydrolysis of Salts in Aqueous

Solution at High Temperatures." Gilbert N. Lewis, research associate in Physical Chemistry, delivered a paper on "The Free Energy of Oxidation Processes."

Professor Andrew N. Grabau, of the Department of Geology at Columbia University, has been awarded the first Walker prize, given each year by the Institute for the best memoir on a scientific subject. Professor Grabau submitted an essay on "The Interpretation of Sedimentary Overlap."

The American Institute of Architects has recently held, in Washington a convention, in commemoration of the fiftieth anniversary of its foundation. The Massachusetts Institute of Technology was represented officially on this occasion by Professor Bartlett, who presented a brief address of greeting and congratulation.

The regular monthly meeting of the Instructors' Club was held at the Union, November 20. The annual election of officers resulted as follows: president, Mr. Henry L. Seaver; vice-president, Mr. Francis H. Dike; secretary-treasurer, Mr. Joseph C. Riley; executive committee, Messrs. Robert Smith and Charles F. Willard. Mr. George L. Hosmer gave a very interesting talk on "The M. I. T. Eclipse Expedition to Sumatra."

The secretary is constantly in receipt of applications for men to fill positions of every kind. It is earnestly hoped that alumni who desire employment or who wish to change their occupations will keep their names on file at the Institute. Blank forms for the purpose will be supplied by the secretary.

DEPARTMENT NOTES

MINING

In the Mining Department the opportunities for students are being enlarged at the present time by improving the Wetherill electro-magnet, which makes separations of minerals requiring a very high power magnet.

A glass table a foot wide is being designed for testing the conditions for separating ores on surface tables to the best advantage.

A pulsator, with all the latest improvements and adjustments,

has just been installed for doing the most efficient form of classification of ores.

The new flotation methods of Potter, Delprat, Catermole, and Elmore will be installed on a very small scale. Some of these new designs and processes are expected to be used in thesis work this year.

Two of the assistants have accepted places, and are about leaving at this time. Mr. J. T. Glidden has gone to be assistant editor of the *Engineering and Mining Journal* of New York. Mr. Ralph Hayden is leaving shortly to enter upon work with the Anaconda Copper Company of Montana.

As an illustration of the cosmopolitan character of the Institute students, Mr. and Mrs. Richards gave a party at Technology Club on December 20 to a few of the mining students who had brought introductions or who were assigned to advisers. One was from Newburyport, Mass., one was from Boston, one was from Oskaloosa, Ia., one from Pennsylvania, one from Ohio, one from South Africa, one from Shanghai, and one from Hang-chau, China.

PHYSICS

The Department of Physics has received very considerable accessions of apparatus this autumn. Besides much that is of a miscellaneous character, there may be particularly mentioned an important addition to the collection of vacuum tubes, already one of the most complete in the country, consisting of high vacuum tubes for illustrating the recent researches of Wehnelt on the radiations from glowing metallic oxides.

There should also be mentioned several additions to the collections of gyroscopes, now a very complete one, Bose's apparatus for the study of short Hertz waves, a new Torsion Balance, and a Geryk Air Pump. This last will prove useful for the ready production of high vacua without recourse to a mercury pump.

The department has received from Mr. R. F. Gaylord the gift of a valuable ribbon chronoscope, with a tuning-fork recorder, of exceptionally good design and construction.

The most important addition is the recently perfected apparatus for the study of microscopic objects by ultra-violet light from the Zeiss Optical Works. The principle that the resolving power of a microscope increases in direct proportion to the diminution of the wave-length of the light employed is in this apparatus carried practically to the limit by using the ultra-violet radiation from the electric spark between cadmium or aluminium electrodes. This is spread out into a spectrum by suitable prisms, and the chosen portion made to fall like ordinary light upon the object on the microscope stage. But, inasmuch as the glasses used for ordinary microscope lenses are practically opaque to this radiation, the entire optical system of lenses and prisms is made of quartz. The radiation itself is totally invisible; and it is therefore necessary to make the preliminary adjustment with the aid of a fluorescent screen, on which the image becomes visible while focussing, a photographic plate being substituted for the screen when the actual picture is to be made. Many objects, particularly bacteria and crystals, which are transparent and almost invisible by ordinary light, are opaque or nearly so to the ultra-violet radiation, and are thus capable of being examined without the necessity of previous staining.

This important acquisition, in connection with the photomicrographic camera and apochromatic lenses recently purchased, equips the department for photomicrographic work and research of the highest grade.

A work entitled "Photography for Students of Physics and Chemistry," by Professor Derr, has just been published by the Macmillan Company.

NAVAL ARCHITECTURE

Improved Methods of Teaching Ship Construction

Ship construction is a subject more or less difficult for the average student in naval architecture,—more difficult rather than less,—for he frequently is a man who has had little, and more often no, experience whatever in the shipyard. Students come to us,

strange as it may seem, who not only have never stepped foot inside a shipyard, but have never seen a vessel near to. To teach such men the details of ship construction, the riveting together of plates and angles, is an important matter that has caused the Naval Architecture Department no little concern. We are inclined to believe that the present method of teaching, together with a considerable development of the course,—sixty lectures now being given in place of thirty a year ago,—is likely to accomplish the desired result.

The course aims in the beginning to teach the student what the ship is, how the shipyard is laid out, what its essential features may be, and how they are provided for. And it undertakes a discussion of the construction or building apparatus, the crane service, the heavy machine tools, pneumatic tools, and the various appliances connected with modern shipbuilding. These are all illustrated by a large number of lantern slides. The process of erecting the material is best illustrated by excursions to the various yards, but the details of the actual work can perhaps be better shown by small models than by any other means.

The department has already constructed several wooden models, one-quarter size, which represent various types of plate and angle construction, such as deck stringers, web frames, bulkheads, etc. Angle shapes to the proper scale are milled out of pine lumber, assembled in the proper form, with small wooden rivet-heads attached. The whole, when painted with a good coat of red lead, is a most excellent imitation in miniature of the actual plates and angles; and the student, no matter how unfamiliar he may be with shipyards and shipbuilding, does not fail to grasp the essential features of the work, when thus illustrated.

Lithograph plates have long been furnished to the students, illustrating this work; and, although they possess a distinct advantage, in that the student can take them away with him, they do not convey as clear an idea as can be had with these wooden models, which are made correct in the minutest detail.

These models not only are used in illustrating the lectures, but are kept in the room where they can be constantly inspected.

MODERN LANGUAGES

Professor Bigelow, assisted by Mr. Lenz and Mr. Meister, of the Department of Modern Languages, and a number of their friends, entertained the Tech Union on the evening of Saturday, the 15th of December, with German student songs. Professor Bigelow reviewed briefly the history of German student singing, and introduced each song with an English version and a few remarks upon its origin, significance, and merit. He expressed the hope that American students would follow the example of the Germans in having but one song-book for all universities, and advocated the adoption of the best songs of Germany, France, and other countries. He expressed the belief that American students would sing more than they do if they had better songs and more of them.

MATHEMATICS

Professor Osborne has been granted leave of absence for the present term on account of ill-health, but has made such improvement that he is expected to resume teaching in February.

Professor Tyler has been elected vice-president of the Association of Teachers in Mathematics in New England and a member of a committee representing local Associations of Teachers of Science and Mathematics, appointed to work out a plan for an American Federation of such associations.

Mr. Ernest A. Miller, instructor in mathematics, was married, December 15, to Miss Phillips, of Salisbury Road, Brookline.

EXTRACTS FROM THE ANNUAL REPORT OF THE PRESIDENT AND TREASURER
OF THE CORPORATION, DECEMBER, 1906 **Extracts from Report of the President*

. . . During the last year the Executive Committee has had under consideration, at various times, certain administrative changes looking toward

* Limited space has obliged the REVIEW to omit many interesting extracts from the reports of the President and of the Heads of Departments which would be of great interest to all readers. The REVIEW, therefore, urges all those who do not receive a copy of the reports to send a request to the Institute for one.

a more definite assignment of duties amongst the various officers charged with administration. Until within the last few years there were only two administrative officers under the Executive Committee, the President and the Secretary. With the growth of the Institution, the increase in attendance and the consequent enlargement of all its relations, the need of a larger administrative staff was felt. For years past Dr. Tyler has combined the work of Secretary with that of head of a department. As Secretary he has had under his charge not only the general correspondence and the work of administrative assistant to the President, but the work of Secretary of the Faculty as well, which involved membership in several important committees and supervision of correspondence which had to do with student reports and student standing. After careful consideration the Executive Committee has appointed a Secretary of the Institute, who serves as administrative assistant to the President, and is in charge of the general correspondence and outside relations of the Institute. The duties of Secretary of the Faculty are performed by an officer who is elected by the Faculty, and who has to do with the immediate questions of student standing and reports and with the arrangements which the Faculty make with respect to such matters.

Professor Tyler, who has for many years performed an enormous amount of work in connection with all these duties, remains in charge of the Department of Mathematics, and expects to devote his entire time to the development of this important and fundamental branch of the work of the Institute. To the position of Secretary of the Institute there has been elected by the Executive Committee *pro tempore* Professor Dana P. Bartlett; and to the position of Secretary of the Faculty the Faculty has elected Professor Allyne L. Merrill. In taking this action, the Executive Committee has placed on record an expression of high appreciation of the faithful and efficient service which Dr. Tyler has rendered to the Institute in his long performance of the work of Secretary of the Institute and of Secretary of the Faculty.

. . . In the early history of the Institute the Corporation was the sole body of government, and dealt directly with all the details of administration. The result was unsatisfactory. The membership of the Corporation is too large to admit of the effective transaction of business in such a way, and for this reason the By-laws were amended so as to provide for the Executive Committee, which, under the Corporation, has charge of the details of administration. The creation of this body has had the tendency to carry the administration to the other extreme, and to intrust to the Executive Committee almost the entire direction of the institution.

The desirable administration lies, as it seems to me, somewhere between

these two points. The Executive Committee should take immediate charge of the actual administration, but it is most desirable, as I view it, that the Corporation should not lose its function of passing upon all matters which have to do with the general policy and the larger purposes of the institution. . . .

Since the addition of the term members, some of whom come from a distance, it seems increasingly desirable that some means should be adopted of informing members of the Corporation in advance of the nature of the business likely to come up for consideration at the regular meetings. . . .

Another plan worth trying, it seems to me, is a modification of that which is used with great success in the Board of Trustees of the Carnegie Foundation for the Advancement of Teaching.

. . . The minutes of the Executive Committee are printed in full, with a free running comment on such matters as were considered, and sent, after being printed, to all members of the Board of Trustees. . . .

In any body as large as the Corporation of the Institute which does not deal with the direct details of administration, the question of retaining the interest and the co-operation of the members is not always easy. Those in direct charge of the administration, with the best intentions, do not always understand that the man in the larger legislative body is likely to tire of an arrangement which does not involve actual duties and responsibilities. On the other hand, it is not desirable to bring before the larger body the details of administration which have to do with routine matters. Just how to combine the functions of these two bodies so as to preserve their mutual interest is one of the things which those in charge of the government of the Institute need to consider. . . .

During the past year the Carnegie Foundation for the Advancement of Teaching has been inaugurated and has begun its active work. . . .

It is not an agency for the mere pensioning of superannuated professors. The foundation stands primarily for the idea that the time has come in the history of American education when it is important—not only important, but vital—to strengthen the position of the teacher and to make it attractive to strong men, men who have initiative, who have intellectual qualities, who have social attractiveness, and the ability to influence other men. . . .

With these principles in view, the Trustees of the Carnegie Foundation for the Advancement of Teaching have . . . recognized some fifty-two institutions as entitled, by reason of fair standards and courses of study, to participation in this fund. . . .

Among institutions thus admitted to the retiring allowance system is the

Institute of Technology, so that our professors may now receive through the officers of the Institute a guarantee of the protection and the benefit of the retiring allowance system. The retiring allowance amounts, in the ordinary case, to about sixty per cent. of the active pay of the professor at the time of retirement; and under the rules of the Foundation the half of this amount is made available for the widow of the professor should she survive him. . . .

The problem which stands immediately before the government of the Institute is that of the settlement of the question of its location during the next fifteen or twenty years. This should be settled at the earliest practicable moment, in order that those who have to do with the Institute and to work for its advancement may work with definiteness of aim and with understanding of what its future is to be. . . .

It seems to me clear that for the present and for many years to come the Institute of Technology must give the greater part of its effort to the undergraduate instruction. It seems, however, equally clear that, if it is to retain any large measure of leadership, it must develop at the same time graduate and research work. To compass these two somewhat dissimilar aims in the same institution is not easy; and I feel that, of several, perhaps the best purpose I can serve at this moment is by calling your attention to the existence of these tendencies, and to the fact that your choice of the policy of the Institute is likely to have an important bearing upon its future standing according as its work tends to a purely undergraduate school or as it tends to include in its work a fair measure of graduate work and of research. . . .

. . . We men in the college of technology need to recognize that it is not the study of literature, nor of economics, nor of history, nor of any other subject, that *per se* brings culture and a broad sympathy with men. Chemistry, physics, and mechanics may be taught in such a way as to develop great humanistic interests as effectively as any of the so-called culture studies. The fact that we need to lay to heart is that the thing which brings true culture to men is intercourse with other men of culture, acquaintance with the thoughts of great men either through the medium of books or through the words of living men. It is the rubbing of one student against another. If we desire to increase in our colleges of technology a spirit of true culture and to bring about a larger common interest, the effective way to do this is to bring into our colleges teachers who are themselves exponents of this culture and of this wide human interest. . . .

It is to be remembered that the chief purpose of the school of technology is to train practitioners in applied science, just as it is the chief purpose of

the medical school to train practitioners in medicine. It is necessary that there should be that about the technical school which may encourage and inspire the small minority of those who come to the life of the teacher and investigator; but the main purpose of the school is that which I have mentioned. For this reason it is important that the student should have the view-point of the practitioner of engineering, just as it is important that the medical student should have the view-point of the practitioner of medicine; and, to bring this about, the teacher in the technical school himself should be a practitioner, just as the teacher in the medical school usually is. It is one of the advantages in the teaching of medicine that the practice may be so readily brought into the clinic before the students; and we may well imagine what sort of physicians and surgeons would be turned out if their instruction lay wholly in the hands of men who were teachers rather than practitioners.

To bring about a closer contact with the manufacturer and to secure the real interest of the man of business in the school of technology is also a vital need of applied science at this time. The college in the United States presents too often to the business man the attitude of the persistent beggar rather than the attitude of a co-laborer and sharer in the industrial problems. How to assure closer contact with industry and business is a problem which the school of technology of the next ten years must closely study.

One way of securing this closer relation, as it seems to me, would be to develop the practical service of the school to the industrial interests of the Commonwealth and of the nation. For instance, the development of the great testing and research laboratory at Charlottenburg in connection with the school of technology has been an enormous factor in cementing together the school and the industries which it seeks to serve. . . .

EXTRACTS FROM REPORTS OF DEPARTMENTS

Departments of Civil Engineering and Sanitary Engineering

. . . With still increasing numbers of students, and especially with the increasing pressure in the curriculum of other subjects to which more time ought to be devoted than has been found possible in the past, the question of proper method of conducting field work, and the possibility of saving some of the time now devoted to it during the school year, becomes a very pressing one. . . .

I believe that it is desirable that the Corporation should give immediate and serious attention to the question of inaugurating a summer school for

field work which all students in Civil Engineering should be required to attend. Some changes in the courses of study would be required, but I think it would be found necessary to require students to attend such a school only during the vacation following the second year. During six or eight weeks of continuous work they ought to complete the field work in surveying and in railroad engineering, and the hydraulic field work, leaving for the work of the term only the study of methods and instruments, and, to some extent, the plotting of results. . . .

Some years ago mention was made of the high rank obtained by graduates of these Departments in examinations for the position of Civil Engineer in the United States Navy and in the Geological Survey. The latest instance is the examination, held a few months ago, for the position of Assistant Engineer for the Board of Water Supply of New York. A grade of seventy per cent. based partially on experience, etc., was required for passing. There was a large number of applicants, and one hundred and fifty of them were successful. Of this number five out of the leading six (all but No. 3) were graduates of Courses I. and XI., and nineteen were former students of these Courses, including one non-graduate. . . .

Department of Mechanical Engineering and Applied Mechanics

. . . The improvements in the Course in Mechanical Engineering mentioned in the President's Report of January, 1906, have proved to be of great value in increasing the usefulness of the Course, and in aiding us materially to keep it more and more in touch with the needs of the times, and with the live engineering questions of the day. Among these improvements may be especially mentioned the increased time devoted to each of the fourth-year Options, the addition of work in Power Plant Design, and the greater amount of instruction in Electrical Engineering subjects.

The practice of these laboratories in carrying on a considerable amount of investigation of modern engineering problems has been, as usual, continued. . . .

Department of Architecture

. . . The good results that have attended the union of third and fourth year students in a common drawing-room have made it highly desirable that the second-year students should have part in the same arrangement. . . . They need the stimulus gained by close association with men stronger than themselves, and they would more fully appreciate how much their own work stands for if they could watch more closely its theory put in prac-

tice by those who have had a year's start of them. The third and fourth year men now meet on a common ground. They help each other in many ways. They work on each other's drawings, and they criticise each other's designs. This association seems to develop more quickly their reasoning powers, and their ability to discriminate between good and bad in architecture and to express themselves clearly in words. . . .

Departments of Chemistry and Chemical Engineering

. . . The Department has also received during the year, through the generosity of Mr. Arthur D. Little, funds for the temporary maintenance of a research assistantship in Organic Chemistry, the subject of the research to relate to the Chemistry of cellulose. An appointment will be made as soon as a suitably equipped assistant can be found. This gift is specially significant because of the purpose which underlies it; namely, to promote the interests and progress of a particular line of industry by the endowment of research in a field of pure science upon which the industry depends. . . .

Visits recently made to the laboratories of other institutions bring out clearly the great desirability of closer association of the branches of the Department than is now possible, and the loss of common interest that the present distribution of the work among the separate buildings entails. . . .

Research Laboratory of Physical Chemistry

. . . Upon the financial side the Laboratory has been again assisted by a grant of \$1,000 from the William E. Hale Research Fund and by a renewal of the grant of \$2,000 from the Carnegie Institution to Professor A. A. Noyes in aid of certain electro-chemical investigations which are being carried on in the Laboratory. In addition, a grant of three hundred dollars has been made to one of the research workers, Mr. Richard C. Tolman, from the C. M. Warren Fund of the American Academy of Arts and Sciences, to enable him to construct what will probably be the most powerful centrifugal machine ever made for experimental purposes, to be used in connection with an investigation of the electromotive force produced at the two ends of a rapidly rotating solution of any ionized substance; and a separate grant of three hundred dollars from the Rumford Fund of the American Academy has been made to Professor A. A. Noyes, which is to be used for the construction of a calorimeter adapted to direct thermochemical measurements with solutions at 100°. . . .

Department of Electrical Engineering

. . . The plan of having many of the problems formerly assigned as home work now solved under the supervision of an instructor is being gradually enlarged with most satisfactory results. The opportunity for helpful suggestions and the elimination of harmful student co-operation are both accomplishments of genuine importance in the proper training of the students. . . .

Department of Biology

. . . A number of special students working together in the Research Laboratory of the Department, under the direction of Assistant Professor Winslow, have accomplished an important and elaborate piece of original investigation on the systematic relations of the bacteria of the family Coccaceæ. This work has not only cleared up the relationship of this group of organisms (which, besides some occurring in air, earth, or sewage, includes forms ordinarily causing blood poisoning), but also opens up a promising method of approach to some of the fundamental problems of variation and heredity. . . .

The Sanitary Research Laboratory and Sewage Experiment Station, affiliated as it is with this Department, has constantly proved of the highest service to students of Biology, and it is greatly to be desired that it shall become a permanent part of the Institute equipment, since it furnishes facilities altogether unique and well-nigh indispensable for students of Sanitary Biology, Municipal Sanitation, and Sanitary Science, not to mention those in Sanitary Engineering and Sanitary Chemistry. . . .

Department of Geology

. . . The opportunities for productive research in Physical Geology are nowhere greater than in a well-equipped technical school. The remarkable series of disasters in the last two decades due to earthquakes, flood-waves, and volcanoes marks the inadequacy and helplessness of earth science and its need of investigation on the practical side. The time is ripe for the establishment of research laboratories of Physical Geology devoted to experimentation and exploration-measurement of earth movements and prompt investigation in time of emergency with a view to forewarning and protection in the future. The engineering and physical laboratories can effectively co-operate in such investigations. Five thousand dollars a year for ten years at the Massachusetts Institute of Technology would establish and

maintain such a laboratory, and in that time the published results ought to produce a permanent endowment. . . .

Department of English

The English Department made this year its first trial of entrance examinations under the new conditions. The arbitrary requirement in preparatory work of a list of prescribed books has been done away with; and teachers are now free to choose such works of literature as seem to them best adapted to the needs of individual classes. The examinations are now made more completely tests of the results upon a candidate of his training in the secondary schools. He is tried in composition especially for the accuracy of his thought and his power of expression; in literature for his realization and appreciation of the qualities which make literature of worth. The Department feels that it has reason to be pleased with the results, both in the papers actually written by candidates for admission and in the effects, so far as they are yet evident, of the attitude of secondary schools toward the work of the Institute. . . .

Report of the Secretary of the Faculty

. . . The distribution of third-year students among the new general options is as follows:—

Advanced English Composition	28	English Literature of the Eighteenth	
Advanced French	11	Century	26
Advanced German	24	French Colloquium	24
Colonial Systems	11	German Colloquium	16
Economic History	31	History of Science	45
Elementary Spanish	74	International Law	102
		The English Bible	5

. . . Near the end of the year a special committee on Faculty Organization was appointed to report on a plan presented by the President for changes in the conduct of Faculty business. The committee has not yet reported upon this matter, but has been occupied since the beginning of the school year with questions growing out of the action of the Executive Committee in discontinuing the "Secretaryship of the School" and establishing a Secretaryship of the Institute. . . .

Financial grants amounting to \$5,850 have been made to fifteen persons for graduate study, ten at the Institute, and five for work elsewhere. At

the end of last year the master's degree was awarded to nine candidates, including three naval constructors. There are at present eleven candidates for that degree, and ten for the degree of Doctor of Philosophy. . . .

The procedure with students entering the Institute from other colleges with advanced standing has been the subject of Faculty consideration during the year. It has been voted to excuse the bachelors of arts entering above the second year from first-year English and United States History, second-year English Literature and European History, the third-year general option, and the summer reading. Graduates entering the third year of the Courses in Chemistry, Biology, or Physics, may also offer an equivalent for Mechanical Drawing and Descriptive Geometry. . . .

Report of the Dean

. . . Mr. John F. Mahan, coach for the athletic teams, reports that the approximate number of men who have taken part in the different kinds of recognized athletics carried on by the Massachusetts Institute of Technology Athletic Association is as follows:—

Track Athletics	90	'09 Tug-of-war	61
Hare and Hound Run	36	'10 Football Team	26
Basket Ball	30	'10 Tug-of-war	65
Lawn Tennis	25	Total	344
'09 Football Team	17		

The approximate number of students who used the Technology Athletic Field from September 26 until October 27 is ninety men per day. . . .

Statistics of Illness for the School Year 1905-06

	<i>No. in Class.</i>	<i>No. Ill.</i>	<i>No. of Deaths.</i>
Fellows and Graduates	26	—	—
Fourth Year	381	22	1
Third Year	358	25	—
Second Year	409	41	—
First Year	292	29	1
Total	1,466	117	2

Report of Medical Adviser

. . . A large number of conditions were treated, the most numerous being diseases of the digestive apparatus, of the nose and throat, of the skin, and surgical affections. About a dozen men suffered from severe illness, such

as appendicitis, Bright's disease, malaria, jaundice, goitre, cocaine habit, and fractures. Two men had to leave the Institute on account of pulmonary tuberculosis. A small number of students were referred to specialists for treatment of the eye, ear, and skin. A small number of students were referred to the Massachusetts General Hospital, where the Institute has free beds, for the treatment of such acute diseases as appendicitis, grippe, malaria, asthma, fracture, etc. . . .

At the suggestion of Professor Talbot a talk was given the instructors and students of the Chemical Department upon the emergency treatment of injuries to which chemists are especially exposed. The subjects covered were burns, including those made by mineral acids and phosphorus, the treatment of suffocation or poisoning by gases such as hydrogen sulphide, carbon monoxide, chlorine, bromine, ammonia, hydrocyanic acid, arseni-uretted hydrogen, ether, and turpentine vapors and poisoning by the accidental swallowing of mineral poisons. . . .

EXTRACTS FROM REPORT OF THE TREASURER

For the Year ending Sept. 29, 1906

. . . Substantial savings have been effected in various items of expenditure, notably in those for fuel, water, gas, and electricity. . . . Less has been spent for the publication of notes, and in the matter of general expenses there would be a decided saving were it not for certain large and unusual expenditures. . . .

. . . There has been an increase in expenses and a decrease in receipts from students' fees and the net result, comparing current expenditures with current receipts, is a deficit of \$3,896.21. In this account is taken of one of the most interesting features of the year, namely, the results of the devoted and efficient work of the Income Committee. This Committee has paid over to the Institute during the year \$42,583.61 free from all conditions. The collection of this sum shows the good will of the alumni, as well as the good work of the Committee.

Apart from the above the Institute has received through the generosity of Mr. Nathaniel Thayer \$25,000, to be added to the permanent endowment fund. A similar amount has been received from the executors of the will of the late Charles Choate, and a like sum from the executors of the will of the late Macy S. Pope.

Charles G. Weld, M.D., has generously given \$15,000 to be added to the

permanent endowment fund, and in addition to this has given \$1,600 for the Department of Naval Architecture.

From the same generous but anonymous donor, who has contributed a like amount in previous years, we have received \$5,000 for the Sanitary Research Fund.

Dr. A. A. Noyes has given \$3,000 for the Physico-Chemical Research Laboratory.

Dr. W. W. Jaques, \$1,000 for the Department of Physics.

The estate of the late William E. Hale has contributed \$1,000 for the Physico-Chemical Fund.

Mrs. William B. Rogers has again given \$225 for the purchase of periodicals for the Library.

From the estate of the late Ednah D. Cheney we have received a further payment of \$180.

From the B. F. Sturtevant Co. a motor of the value of \$150, and from Professor Henry M. Howe \$100.

The net result of the whole year is an addition to the property of the Institute of \$86,865.85.

The Walker Memorial Fund now amounts to \$107,557.06. . . .

THE UNDERGRADUATES

CONVOCATIONS

On November 8 Dr. Frederick W. Hamilton, the newly elected president of Tufts College, addressed the student body. Before introducing Dr. Hamilton, President Pritchett gave a short talk on the value of student activities.

At a general convocation held December 7 President Pritchett spoke of the Christmas holidays, and said that any Tech man who was unable to go home on Christmas Eve would be welcome at that time at the Union, where the usual celebration would be held. He then introduced Dr. Henry Van Dyke, of Princeton, who took as his subject "Manhood."

PROFESSIONAL SOCIETIES

Civil Engineering Society.—Mr. James W. Rollins, '78, gave a very interesting and practical talk on "Causeway Construction" on November 9.

Mechanical Engineering Society.—Mr. Arthur D. Dean, '95, who is in charge of Y. M. C. A. Trade Schools throughout New England, addressed the society on "Modern Industrialism and Some of its Responsibilities" at its meeting on November 6.

On November 27 the society listened to "A Strange Story of the North Woods," told by William Lyman Underwood.

The society held a dinner on December 20 at the Copley Square Hotel. About seventy-five men attended, President Labbe presiding. Colonel Albert Pope, of the Pope Manufacturing Company, was the principal speaker, and was followed by Professors Lanza, Schwamb, Miller, and Haven.

Mining Engineering Society.—The society met on November 13 at the Tech Union to hear a talk on steel and iron castings by Dr. Richard Maldenke.

A meeting of the society was held November 27. Three members

from the Senior Class gave interesting and practical talks on their summer work in mining.

Electrical Engineering Society.—A meeting of the society was held at the Tech Union November 5, with a large attendance. President Macomber presided. Professor Shaad gave the members a talk on "Apprenticeship Courses in Large Electrical Companies."

Mr. Matthew C. Brush, '01, gave a very interesting talk to the Society at the Tech Union on December 3.

Geological Society.—Mr. R. A. Daly, Geological Commissioner of the Dominion of Canada, lectured before the society December 8 on his work in the Rocky Mountains.

THE CLASSES

1907.—This year the Senior Class will have the distinction of being considerably below the average in numbers. The official records show 178 regular fourth-year students as compared with 243 last year. The number of special students, while large, does not compare with the previous year, and thus it points to a select graduating class this June.

A number have dropped by the wayside during the three years; and now, as one begins to realize that the time is drawing near when those ties which have "made us and staid us" must soon be broken, one sees what Tech has meant, and there are mighty few who, from the sentimental side at least, do not wish that they were going to start in again next fall as Freshmen.

Plans are being made to perfect a strong class organization, so that, when 1907 join the ranks of alumni, they will be able to keep in touch with one another and the life of their Alma Mater, which is so essential to the success and growth of an institution.

As a result of the class elections this fall, the following men were chosen as Senior officers: president, Lawrence Allen; Vice-president, R. C. Albro; secretary, Alexander Macomber; treasurer, G. A. Griffin.

A most successful class dinner was held at the Union November 9, with a record attendance. The guests were Dean Burton, Professor Wendell, Bursar Rand, and from the alumni Everett Morss

and I. W. Litchfield of '85. After the dinner the meeting was thrown open to discussion of class affairs.

It was voted that 1907, as part of their class gift, undertake the publication of a new edition of the "Tech Song Book," to be dedicated to the memory of Frederic Field Bullard, '87; and a committee, consisting of Packard, Robbins, Hastings, Coffin, and Middleton, was appointed to have charge. Considerable progress has already been made, and the result will be a great source of pride to the class of 1907.

The question of cap and gown for graduation was brought up and thoroughly discussed. Rather, however, than decide such an important innovation without due thought and consideration it was voted to refer the matter to the class on a ballot vote at the time of election of the Senior Portfolio Committee. This was done, and the result was overwhelmingly in favor of the cap and gown.

The result will now be submitted to the Faculty for their approval, and it is earnestly hoped the change will be made, as it will add no little to the dignity of our exercises.

The Senior Portfolio Committee, as recently elected, consists of Robbins, Frank, Swett, Wonson, and Hastings, and an excellent book is promised.

The following men have been elected Class Day Committee: R. C. Albro, C. E. Allen, L. Allen, J. M. Barker, C. R. Bragdon, C. W. Coffin, A. H. Donnewald, J. M. Frank, G. S. Gould, G. A. Griffin, H. B. Hastings, C. D. Howe, F. S. McGregor, A. Macomber, S. A. Marx, N. A. Middleton, S. R. Miller, E. H. Packard, K. W. Richards, D. G. Robbins, O. H. Starkweather, P. N. Swett, E. F. Whitney, H. S. Wonson, W. L. Woodward.

1908.—The result of the class elections is as follows: president, H. T. Gerrish; vice-president, H. E. Allen; secretary, K. Vonnegut; treasurer, J. T. Tobin; Executive Committee, W. A. Adams, H. Webb; Institute Committee, G. T. Glover, H. A. Rapelye; Junior Prom. Committee, H. T. Gerrish, F. H. McGuigan, G. T. Glover, H. Webb, H. R. Putnam, H. A. Rapelye.

The Juniors gave their first class dinner of the year at the Union November 3. F. H. McGuigan acted as toastmaster, and Mr. Rand

and Professors Burton, Merrill, and Wendell were the guests of the evening.

1909.—The officers for the coming year are as follows: president, A. L. Moses; vice-president, A. S. Dickerman; secretary, Miss H. M. Longyear; treasurer, S. S. Bundy; clerk, J. H. Critchett; Institute Committee, R. H. Allen, B. E. Hutchinson; Executive Committee, R. M. Keeney, F. G. Taite.

There were one hundred and seventeen men at the second annual dinner of 1909, which was given November 2 at the Union. B. E. Hutchinson was toastmaster, and Mr. Rand and Mr. Blachstein were the guests of the evening. Field Day was the general topic discussed by the speakers, and the class elections were announced at the close of the dinner.

At the end the class marched in a body to Rogers steps, and dispersed after enthusiastic cheering.

1910.—The result of the elections is as follows: president, J. M. Fitzwater; vice-president, F. B. Avery; secretary, A. F. Glasier; treasurer, A. R. Nagle; Executive Committee, W. U. Foster, F. A. Hurley. The Institute Committee are T. W. Saul, B. Reynolds, and J. M. Fitzwater.

The class held its class dinner November 8. The Tech Union was taxed to its full capacity, and many were obliged to stand.

On December 5, in 6 Lowell, Dean Burton, Dr. Tyler, and Dr. Noyes addressed about two hundred first-year students on "Choice of Course."

CLUBS

Musical Clubs.—One of the most successful concerts that the clubs have yet given was the annual winter concert and dance, held December 18 in the New Century Building. Over five hundred people were present at the concert, and nearly half that number remained for the dance. On the singing of "The Stein Song" by the Glee Club, the whole house stood up, and by joining in on the chorus helped to bring the concert to a strikingly enthusiastic close. At the conclusion of the song R. E. Keyes, '07, leader of the Glee Club, called for a Tech cheer, and all responded with a vim and

rousing enthusiasm that almost shook the walls. The matrons were Mrs. Alfred E. Burton, Mrs. Walter Humphreys, Mrs. Arthur G. Robbins.

Walker Club.—In conjunction with the Technology Club the Walker Club held a reception at the Technology Club October 26. Nearly all the members and some forty guests were present. The reception was held for college graduates and students entering the Institute, in order to acquaint them with their classmates and fellow-students. Men from Cambridge, Oxford, and Heidelberg, as well as from every State in the Union, were present.

At the monthly dinner of the club held December 19 at the Technology Club, Dean Burton, Professor Pearson, and Mr. Blachstein were the guests. Dean Burton spoke of his experiences in France, particularly during his last visit, and gave some interesting descriptions of student life in the French universities.

Civic Club.—At a meeting of the club held November 23 at the Tech Union an address was delivered by Mr. F. N. Balch.

Catholic Club.—Hon. Herbert S. Carruth, ex-alderman and the present head of the Boston penal institutions, gave a forceful talk on "Catholic Leadership" before the monthly meeting of the Catholic Club on January 2.

British Empire Association.—The association held a business meeting and smoker at the Union on December 10.

Mexican Club.—About twenty Mexicans at Technology have established a club which promises to be a success, as already two meetings have been held. As yet no name has been decided upon for the club. The officers are: president, Y. S. Bonillas; vice-president, R. M. Munoz; secretary and treasurer, T. Muriel.

New York Club.—About thirty men attended the first annual Christmas dinner of the New York State Club at the Union December 24. Election of officers resulted as follows: W. I. Griffin, '07, president; F. J. Friedman, '08, vice-president; L. A. Freedman, '07, secretary; B. A. Robinson, '08, treasurer; C. W. Coffin and C. Kurtzmann, '09, Executive Committee.

Ohio Club.—The club has elected the following officers for the year: president, S. R. Miller, '07; vice-president, M. E. Allen, '08;

and Professors Burton, Merrill, and Wendell were the guests of the evening.

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Ohio Club.—The club has elected the following officers for the year: president, S. R. Miller, '07; vice-president, M. E. Allen, '08;

secretary, N. Ransohoff, '10; treasurer, W. G. Spengler, '08; sergeant-at-arms, H. G. A. Black, '10.

Missouri Club.—The annual dinner and business meeting of the Missouri Club was held at the Union December 6. Retiring President J. B. Harlow presided. Dr. Pritchett, who is a Missouri man, was re-elected honorary president of the club. The election for a new president was a close one between E. S. Brown, '08, and W. F. Dolke, '08, and was decided by the two tossing a coin. Brown won, and Dolke became vice-president. A. F. Harold, '09, was elected secretary-treasurer.

Chicago Club Dinner.—The Chicago Club held a very enthusiastic meeting and dinner at the Union on December 12. Charles R. Brigham was toastmaster. Dr. J. D. Smith, a teaching fellow in the department of American Archæology at the University of Chicago, was present, and gave the members a very interesting talk on his experiences in New Mexico and Arizona while "mining for relics" of the ancient Indian peoples.

Y. M. C. A.

The Technology Christian Association has become one of the leading factors in Institute life. Through the information bureau at the first of the year 75 men secured suitable rooms, 20 men secured employment, and a large number received information in regard to registration and other matters. In the securing of rooms, the men had a list of over 150 carefully selected rooms to pick from, all of these rooms vouched for and highly recommended.

Thirteen hundred handbooks were given out, which means that that number of students were registered on the Y. M. C. A. cards. Through the list thus obtained, 800 men were introduced to the churches of Boston. At the present time there are nearly two hundred Tech men taking up Bible study under the auspices of the Association.

KOMMERS

The Tech show held its first *Kommers* November 24.

At a special meeting, December 13, the Institute Committee voted unanimously to assume charge of the *Kommers* next term.

One hundred and ninety men attended the *Kommers* at the Union December 15. After the dinner was over, all sang "On Rogers Steps." Professor John Bigelow, Jr., gave a short history of German student singing, then started the singing of the German songs, translating each one before it was sung. The men present were led in singing by a chorus composed of Germans residing in Boston and other men who knew the songs.

Major Bigelow announced that Heath & Co. had presented the Union with a complete edition of German songs, and that he personally was presenting the Union a German *Kommersbuch*.

CHRISTMAS AND NEW YEAR'S

On December 20 about a hundred students of the Institute enjoyed the reading by Professor Bates of Dickens's "Christmas Carol."

About two hundred men who did not go home for the holidays were entertained at the Tech Union Christmas Eve, at a reception given by President and Mrs. Pritchett and Mrs. William B. Rogers. Dr. and Mrs. Pritchett were not present, as Dr. Pritchett was ill in New York. Dean and Mrs. Burton, Professors Sedgwick and Bartlett, Mr. and Mrs. Rand, and Mr. and Mrs. Mixter were present. Three of the performers from Keith's Theatre gave an excellent entertainment. After refreshments were served, the Bursar assumed the rôle of Santa Claus, and distributed the gifts from the Christmas tree, which was beautifully decorated.

About a hundred Seniors went in a body to Keith's Theatre New Year's Eve, in accordance with the old Tech custom. There was no cheering in the theatre. After the performance the men separated, but at 11.30 the class met again on Rogers steps and sang all the Tech songs and gave all the Tech cheers. At exactly 12 o'clock (corrected for temperature and latitude) the timer gave the word, and a mighty 1907 cheer burst forth.

TECH SHOW

The book of the Tech Show this year has been written by E. W. James, '07, whose manuscript was the best of many excellent ones

submitted. The name of the Show will not be announced until the second term.

ATHLETICS

FIELD DAY

The Annual Field Day took place at the Technology Field on Friday, November 16, the Faculty granting a half-holiday to the students for the purpose. The day was won by the Sophomore Class after the closest contest which has ever taken place between the Freshmen and Sophomores. The relay race and the football game were hard fought throughout, and the tug-of-war was won by the Freshmen in 2 minutes and 9 seconds. The football game and the relay race being won, however, by the Sophomores, that class secured the right to engrave its number upon the Field Day cup.

Cross Country Run.—In the best race that a Technology team have ever run Harvard Varsity was defeated 18 to 39. The record for the course, 24 minutes and 50 seconds, was broken by the first three men to finish, Howland going the distance 19 seconds faster. As this event preceded those of Field Day, the favorable result added much enthusiasm to the afternoon.

Tech Night.—Tech Night at the Tremont Theatre after Field Day was not as lively as former ones, but proved to be an ideal college night and the play, "The College Widow," a most appropriate one. The theatre was decorated with 1909 and 1910 banners, and all the players were wearing either 1909 or 1910 arm-bands. In the last act a dog was brought on, wearing a blanket having 1909 on each side.

CROSS COUNTRY RACE

For the sixth time Cornell won the intercollegiate cross country race this year, with Pennsylvania only three points behind. Technology finished third, with Yale fourth.

For Technology, MacGregor won sixth place, coming in a minute behind the leader. The other Tech men finished as follows: Howland, 14; Callaway, 16; Chapman, 20; Udale, 24; Batchelder, 29; and Patch, 44.

TRACK TEAM

The schedule of the team for the winter and spring season is as follows: inter-class meet, January 8; relay race against Holy Cross at the B. A. A., February 16; dual meet with Holy Cross at the Tech Gym, March 6; spring class games, April 28; dual meet with the University of Maine at Orono, Me., May 4; dual meet with Brown at Tech Field, May 11; New England intercollegiate championship meet, May 17-18. Besides these 'varsity meets the team will be entered in a number of the open meets around Boston, notably in the Newton open meet and that of the Lawrence Light Guards at Medford.

FENCING ASSOCIATION

At the recent meeting of the Intercollegiate Fencing Association Technology was again refused admittance. The West Point representative opposed the election of any new members to the association on the ground that the membership is already too large, and that the present unwieldiness would only be aggravated.

THE ANNUAL INDOOR CLASS CHAMPIONSHIP

The annual indoor class championship, held at the Gymnasium January 8, was decided in favor of 1908.

The summary:—

35-YARD DASH.—Trials. First heat: First, R. C. Albro, '07, time 4 3-5 s.; second, R. M. Keeney, '09. Second heat: First, K. W. Richards, '09, time 4 2-5 s.; second, C. W. Gram, '09. Third heat: first, K. D. Fernstrom, '10, time 4 3-5 seconds. Final heat: First, K. W. Richards, '09, time 4 2-5 seconds; second, C. W. Gram, '09; third, R. M. Keeney, '09; fourth, R. C. Albro, '07.

HIGH JUMP.—First, tie between E. Stuart, '10, and R. H. Allen, '09, height 5 ft. 4 in.; second, H. A. Rapelye, '08; third, tie between H. W. Blackburn, '08, and G. Schobinger, '08.

880-YARD RUN.—First, B. L. Grimson, '08, time 2 m. 14 1-5 s.; second, H. Y. Frost, '09; third, W. R. Waldo, '10; fourth, H. E. Allen, '08.

440-YARD RUN.—First, C. W. Gram, '09, time 1 m. 3-5 s.;

second, J. Avery, '10; third, H. W. Blackburn, '08; fourth, K. D. Fernstrom, '10.

40-YARD HURDLES.—First, R. C. Albro, '07, time 5 4-5 s.; second, C. A. Eaton, '07; third, R. M. Keeney, '09; fourth, H. A. Rapelye, '08.

PUTTING 16-POUND SHOT.—First, J. H. Ruckman, '10, distance, 33 ft. 3 in.; second, C. W. Morrison, '08; third, J. H. Critchett, '09; fourth, H. L. Sherman, '09.

POLE VAULT.—First, G. Schobinger, '08, height 10 ft.; second, T. W. Orr, '08; third, J. Tetlow, '08; fourth, E. S. Russell, '10.

ONE-MILE RUN.—First, H. H. Howland, '08, time 5 m. 5 s.; second, C. L. Batchelder, '08; third, S. M. Udale, '07; fourth, R. W. Ferris, '08.

Summary of points:—

1908.	1909.	1907.	1910.
34	32	16	15

THE GRADUATES

ANNUAL MEETING OF THE ALUMNI ASSOCIATION OF THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

The business meeting of the Alumni Association was held at the Hotel Brunswick Friday evening, Jan. 18, 1907, and was called to order by President Morss at 6.30.

The report of the Executive Committee was read by the retiring secretary, Professor A. G. Robbins. A brief account of the reception given to the class of 1906 in the Engineering Buildings was given. The change of method in electing, and the change of the privileges of associate members, which have been covered by the new amendments to the constitution, were mentioned. This change of the constitution grants to associate members all the privileges of alumni with the exception of that of holding office. A report was made of the establishment of the alumni office in Rogers Building of the Institute, and a formal report was made of the election of five candidates for term membership in the Corporation of the Institute, and also a formal report of the election to the Corporation of nine of the candidates who were selected by the alumni last year, and of the election since then of one of these candidates, Mr. F. W. Wood of 1877, to the Executive Committee of that body.

The trustees of the Alumni Fund and of the M. I. T. Life Membership Fund reported that funds had been received from seventeen new life members, making a total of 130.

The report of the Committee on the School was read by Mr. Keough, and discussed the following points: the non-election of a President during the past year; changes in the list of officers of administration; statistics of the school; the difficulties under which some of the teaching force serve; the danger of too many appointments to the instructing staff from the graduates of the Institute. The functions of this committee were also discussed in the report,

and it was even suggested that, since the alumni has representation on the Corporation, the need of this committee has been, to some extent, done away with.

In the report of the Committee on the William Barton Rogers Scholarship Fund the committee called attention to the fact that some of the former beneficiaries have not been prompt in refunding their loans, and that, in consequence, the committee has been unable to assist students to that extent which it might otherwise have done; and the committee closed its report with an exhortation to the beneficiaries,—“If you can, be as liberal to the other fellow as the fund was to you.”

The report of the Walker Memorial Committee showed that the fund has risen from \$109,754.91 to \$114,397.11, and the chairman of this committee called attention to the fact that, although it is now ten years since General Walker died, the Institute is still without the memorial. He trusts that the question of location may soon be satisfactorily settled, so that the memorial may be erected.

A somewhat longer report was made by the Advisory Council on Athletics:—

It has been the endeavor of your Council:—

First. To study the conditions which command the physical development of the Technology students.

Second. To study the forms of athletic sports which are practicable.

Third. To adapt these sports to Institute traditions and Institute life.

Fourth. And, finally, to develop a system of athletic sports to bring out the greatest possible number of students to compete in various branches of exercise, all of which tend to develop the growing youth properly, without straining or overdoing the athletic side of college life.

The Council regretted that it could not give a more cheerful financial report, and strongly urged that some assistance be given it. Attention was called to the fee of \$8 charged to students at Dartmouth College, and the suggestion was made, for consideration, that a similar tax of \$5 be asked of students at the Institute for the support and maintenance of athletic teams, gymnasium, athletic field, etc. This fee “would place the Advisory Council in a position

where the financial question would not be a block to continually stumble against," and, it is believed, would not be a burden to any student.

As usual, the reports of these various committees will be published in full, and will be sent to all members of the Association.

Following are the officers elected: president, Everett Morss, '85; vice-president, Edward G. Thomas, '87; secretary, Walter Humphreys, '97; for the Executive Committee, Arthur G. Robbins, '86, and Leonard Metcalf, '92; Nominating Committee, Richard A. Hale, '77, George V. Wendell, '92, and Walter E. Piper, '94; Committee on the School, John O. DeWolf, '90; trustee of the Alumni Fund and Life Membership Fund, Edwin C. Miller, '79; Committee on Associate Membership, Leonard P. Kinnicutt, '75, and Harry E. Clifford, '86; Advisory Council on Athletics, John L. Batchelder, Jr., '90.

THE ANNUAL DINNER

The annual dinner was held at the Brunswick, beginning at seven o'clock. About two hundred and fifty alumni were present, and there were a number of members of the Corporation and Faculty, not alumni, seated at the head table. There, also, was Mrs. William Barton Rogers, the honored and greatly loved widow of the first President of the Institute. Mr. Everett Morss presided, and during the dinner called upon Mr. Edward G. Thomas, '87, who made an interesting report on the Alumni Fund (printed elsewhere).

In introducing the after-dinner speakers, President Morss expressed great regret at the absence of President Pritchett, who has been ill in New York for a number of weeks with a mild form of typhoid fever, and read a telegram from Dr. Pritchett conveying his regrets and best wishes. President Morss referred to the past year as one full of events to the Institute. He made formal announcement of the election of nine alumni to term membership in the Corporation, and of the nomination of five more, from whom three members are to be selected by the Corporation in March, and of the election of one of the term members, Mr. Frederick W. Wood,

'77, to the Executive Committee of the Corporation. He spoke also of the fact that non-graduates who are admitted, by the Executive Committee of the Alumni Association, to that body have now all the privileges of graduates excepting that of holding office.

Mr. Morss introduced, as the first speaker, Hon. Eben S. Draper, '78, Lieutenant Governor of the Commonwealth and a member of the Corporation. Mr. Draper brought the greetings of the Commonwealth, and spoke in high praise of the Institute, in part as follows:—

There is no other institution that gives to its graduates such a working capital to start with as the Massachusetts Institute of Technology. It has a place of its own in the sphere of education, turning out men that not only have a complete education, but have a complete knowledge of scientific work. The trade and textile schools that are springing up all over the State are going out of their province when they attempt to do the work that the Institute is doing, and I will make great effort to keep them where they belong. They are schools to teach trades and certain parts of the industrial work. They are attempting to take up the work in a broad way, with the result of giving only a smattering of knowledge.

The second speaker was Professor Wallace C. Sabine, Dean of the Lawrence Scientific School, who told in a most interesting way of the changes which have taken place in Harvard University relative to the department of pure and applied science during the past year. He showed that the trend at Cambridge is towards the gradual absorption of the undergraduates of the Lawrence Scientific School into the academic department and towards the creation of a graduate school of science comparable to the Harvard Law School. Professor Sabine, whose sister (Mrs. Annie Sabine Siebert, '88) is a graduate of the Institute, expressed the most cordial feelings towards Technology and a most earnest desire to work in entire harmony with it.

Mr. Frederick P. Fish, who was next introduced as representing the Corporation of the Institute, said in part:—

There is no doubt that in the past the Institute has been a great school. It started in the front rank, it stayed there, and is there now.

The young men of the Institute ought to be educated so that they are more than engineers. They should have as much breadth as they can get, so as to develop especially toward executive work. The Institute should also strive for research work, for the theoretical science of to-day is the applied science of to-morrow.

Continuing, Mr. Fish spoke with much emphasis of the high appreciation on the part of the Corporation and Executive Committee of the Alumni Fund, and pointed out how this considerable sum of money thus freely given has enabled the Trustees to increase the teaching force, to purchase much-needed apparatus, and to make essential repairs, which, had it not been for this money, they would hardly have felt themselves justified in undertaking. Mr. Fish rejoiced at the opportunity given by such gatherings as this to bring the Trustees and the alumni face to face, and expressed the hope that both bodies might understand one another better, and might work together even more closely than at present.

The last speaker of the evening was Professor Dugald C. Jackson, the newly elected head of the Department of Electrical Engineering. He spoke from the standpoint of a man on the outside of the Institute who was soon to be upon the inside, and expressed his astonishment that, in view of the crowded quarters and inadequate facilities of some of the departments, the Institute still managed to do its full duty by its students, and to turn out men so thoroughly equipped. He voiced the anxious hope of the Faculty and of all Institute men that relief for the crowded condition of most of the laboratories might soon be found. Professor Jackson made a very agreeable impression upon the alumni, to most of whom this was his first introduction.

During the evening there was much class cheering, and the speakers, as well as Dr. Pritchett, were honored with the Tech cheer given by the entire gathering.

RESULT OF ALUMNI VOTE DEC. 20, 1906

In the second election of candidates for term membership in the Corporation, 809 ballots were cast. From the eight nominees whose

names were on the printed ballot, the five who received the largest number of votes were:—

George W. Kittredge, '77.	Eleazer B. Homer, '85.
Frank G. Stantial, '79.	George E. Hale, '90.
Leonard Metcalf, '92.	

All the candidates for officers of the Association whose names appeared on the printed ballot were elected. The four amendments to the Constitution which were recommended on the official ballot were adopted.

THE TECHNOLOGY CLUB

The Technology Club has opened a register for Technology men living away from Boston who may visit this city; and all men, whether members of this Association or not, are cordially requested to register at the Club-house, 83 Newbury Street, when in the city, in order that their Boston friends may know where to find them.

ASSOCIATION OF CLASS SECRETARIES OF THE M. I. T.

The tenth annual meeting and dinner of the Association of Class Secretaries was held at the Technology Club, Boston, on Friday evening, Nov. 23, 1906. During the dinner the business meeting was called to order at 7.35 P.M. by the secretary; and W. G. Snow, '88, was chosen chairman for the evening.

The minutes of the previous meeting on April 20, 1906 (at which arrangements were made for the annual Commencement celebration), and the financial report of the year, were read by the secretary, approved, and placed on file. Financially, the Association was shown to be in a prosperous condition, due in part to the profits from the 1905 "Tech Night Pop Concert," which the Association managed. Beginning the year with a balance of \$531.11, the receipts for the year amounted to \$127.10, and the expenses to \$77.82, leaving a balance on hand at the beginning of the meeting of \$580.39. During the meeting the 1906 Commencement Celebration Committee turned into the treasury a check for \$375.33, the net proceeds of the 1906 "Tech Night Pop Concert" remain-

ing after the payment of the general expenses of this year's commencement celebration, making the total funds of the Association at the close of the meeting \$955.72.

The report of the Committee on Publication of the TECHNOLOGY REVIEW was presented by J. P. Munroe, '82, as follows:—

Soon after the last annual meeting your Board of Publication was compelled, most reluctantly, to accept the resignation of Mr. Leonard Metcalf, who felt that growing professional demands and frequent absences from Boston made it necessary to sever his connection with the REVIEW. Mr. Metcalf's deep interest in Institute affairs, his wide experience of business matters, and his clear judgment made him a most valuable member, and the Board received his resignation with extreme regret. After much persuasion, Mr. Edward G. Thomas, secretary of the class of '87, accepted the position thus made vacant.

The year closing Oct. 31, 1906, has been, in contrast to the preceding two years, one of comparative quiet for the REVIEW. While awaiting the filling of the vacancy in the office of President, the Institute has entered upon no new policies and has made no very radical changes. Therefore, the duties of your Board of Publication have been limited to the securing of news from the Institute departments and the alumni and in procuring a sufficient number of articles bearing upon Technology questions to make up the 500 pages which it is its aim to provide in the four issues of the REVIEW.

Owing in large measure to the zeal of the secretaries of the most recent classes, the bulk of the matter under the general heading of "News from the Classes" has been greater than usual. There has been an increase, also, in the matter from the several departments of the Institute. Through more active co-operation of the undergraduate members, moreover, the "Student News" has been more authoritative.

While this volume has contained no matters of such wide-spread interest as the "Reunion" and the "Proposed Alliance with Harvard," the Board hopes that the four numbers have been of interest to all readers of the REVIEW, and have been a just reflection of the spirit and work of Institute men.

In its report of last year your Board expressed the fear that, unless more revenue were secured, it could not make so favorable a showing this year as in November, 1905, when there was practically no deficit. We are happy to state, however, that the close of the present volume finds us with

only the small deficit of \$43.10. This result has been due to strict economy in the printing of the numbers, and to the facts that our subscriptions have been increased by eighty-three, while the income from advertising has remained practically unchanged. It should be remembered, however, that whenever the present tide of prosperity ebbs, the advertising, and possibly the circulation, will fall off. Therefore, steps should be taken to place the REVIEW, while it is out of debt, upon a sounder financial basis.

In this connection the present writer begs to remind the Association that this completes the eighth year of the REVIEW, and that with the close, preferably of the ninth, and certainly of the tenth volume, he must ask to be relieved of his duties upon the REVIEW. He ventures to suggest, therefore, that the Association take seasonable steps either to secure some one else who can give gratuitous service in the immediate supervision of each number or else so far to increase the revenues of the magazine that it can afford to employ a paid editor.

At the conclusion of the report it was accepted and placed on file; and the meeting voted, unanimously, to extend to the Committee on Publication the thanks of the Association in appreciation of the notably efficient work of the committee in behalf of the REVIEW.

Reports of the 1906 Commencement Celebration Committee were presented by Everett Morss, '85, president of the Alumni Association and chairman of the General Committee, by L. W. Pickert, '93, chairman of the Pop Concert Committee and treasurer of the General Committee, and by H. L. Coburn, '98, chairman of the Committee on Dinners and Spreads. The Commencement Celebration Committee, through its sub-committees, successfully managed the "Tech Night Pop Concert" and the class spreads on Commencement Day, June 5, assisted the classes in arrangements for class dinners, and undertook all general work of the celebration, except the alumni reception to the graduating class, which was in charge of the Executive Committee of the Alumni Association.

The report of the Pop Concert Committee showed that in every way the 1906 "Tech Night" was a success. The gross receipts from the concert were \$1,538.70, of which \$1,000 was paid to the

management of Symphony Hall, leaving a surplus from the concert of \$538.70. From the latter were paid the general expenses of commencement, including printing, postage, clerical work, and advertising, amounting to \$166.95, and up to the time of the meeting \$3.58 had been received for interest on deposits, making the net proceeds of the commencement celebration \$375.33. In his report Mr. Pickert emphasized the importance of engaging Symphony Hall early, and suggested that in the coming year the Celebration Committee commence its labors early in the second term of the school year, in order that the undergraduates, and the graduating class in particular, might make suitable arrangements for attending the "Tech Night Pop Concert."

Mr. Coburn, for the Committee on Dinners and Spreads, reported that, owing to the convention of the American Medical Association, held in Boston during our Commencement Week, it had been difficult to secure suitable accommodations for the classes at Back Bay hotels on Commencement Day. For this reason, in many instances, two or several classes held joint dinners. The committee made arrangements for all class spreads, which were held in Institute buildings, and in many instances the committee materially assisted the class committees in arrangements for the class dinners. Mr. Coburn suggested that in future individual class spreads be held once in five years, at the time of the general reunions, and that in the intermediate years all classes unite in a common spread at the Technology Club.

In the report for the General Celebration Committee, Mr. Morss raised the point as to whether it would be better for the Alumni Association to take charge of the commencement celebrations in the future. This led to a general discussion of the question of centralizing in the Alumni Association all alumni activities, including the publication of the *TECHNOLOGY REVIEW*. The sentiment of the meeting seemed to be that the Alumni Association should be strengthened in every possible way, so that in time it would be in a position to take charge, more generally, of alumni activities. It is manifestly impracticable, however, to conduct alumni business by frequent mass meetings of the alumni body,

and necessarily the management of its affairs must be delegated to some committee with wide powers, such as the present Alumni Association Executive Committee. Contrasting the latter committee with the Association of Class Secretaries, it was pointed out that the Executive Committee was small, not broadly representative, and lacking in permanence of organization and policy. According to present custom it is very rare for any member of the Executive Committee, with the exception of the Alumni Association secretary, to serve more than two years consecutively upon the committee; and, practically, that committee loses half its membership every year and is completely changed every two years. The Association of Class Secretaries, on the other hand, is broadly representative, not only of graduate, but of undergraduate interests. Included in its membership are representatives of every class from '68 to the Freshman Class, as well as representatives of all alumni organizations throughout the country and certain officers of the Institute. Its membership changes but slowly, and here permanence of organization and of policy are to be found. Taking these and other considerations into account, the meeting was strongly of the opinion that the time had not yet come to ask the Alumni Association to undertake the publication of the REVIEW, and that, for the present at least, it would be better to leave the management of the commencement celebration to the class secretaries, as the body best fitted to consider the details of the celebration. Furthermore, it was felt that, so long as the Association of Class Secretaries was responsible for the publication of the REVIEW, the profits of the celebration might well be used to form a guarantee fund for that magazine.

By unanimous vote the reports of the 1906 Commencement Celebration Committee were accepted, and the committee was given the thanks of the Association, and formally discharged.

The report of the Committee on Closer Relations among Graduate Organizations was presented by C. F. Read, '74, chairman. A feature of the year's work of this committee has been the adoption of a uniform membership card, now in use by many of the local alumni societies, which serves as a card of introduction to all Tech-

nology clubs and other alumni organizations. The Committee on Closer Relations consists of the assistant secretary of the class secretaries, as chairman, the secretary of the Alumni Association, the secretary of the Faculty, and representatives of two local societies, to be determined at each annual meeting. It was voted that for the coming year the Technology Club of Philadelphia and the Technology Club of Vermont be represented on the Committee on Closer Relations.

The desirability and need of sending representatives from the Institute to meetings of alumni in other cities was discussed at length, and the sentiment of the meeting was shown to be strongly in favor of keeping alumni in distant places informed about Institute affairs through this and other means. It was voted to suggest to the Alumni Association the desirability of sending representatives to alumni meetings in other cities; and, further, it was voted that the Committee on Closer Relations be requested to interest itself actively in securing information in regard to meetings of local societies for announcement in Boston, and to co-operate, as far as possible, with officers of the Institute in securing representation of the Institute at meetings of local societies.

A Circulation Committee, consisting of I. W. Litchfield, '85, H. K. Barrows, '95, and R. H. Stearns, '01, was appointed to assist the Committee on Publication of the REVIEW in increasing the circulation of that magazine.

Mr. Macomber, '07, announced that the gift of the present Senior Class to the Institute would be the publication of a new and revised edition of the Tech Song Book, and that in due time the co-operation of the alumni would be asked for the undertaking.

The by-laws were amended by adding the Secretary of the Institute and the Dean to the membership of the Association.

At the election of officers for the term of two years the secretary was re-elected; and I. W. Litchfield, '85, was chosen assistant secretary in place of C. F. Read, '74, who declined re-election. As a mark of appreciation of Mr. Read's five years' official service, the thanks of the Association were unanimously voted to the retiring assistant secretary.

The meeting adjourned at 10.25 P.M. The attendance was thirty-three, and included the secretaries of the Washington and Vermont alumni organizations.

FREDERIC H. FAY, '93, *Secretary.*

I. W. LITCHFIELD, '85, *Assistant Secretary.*

NORTH-WESTERN ASSOCIATION OF THE M. I. T.

The annual fall dinner of the Association was held at the Chicago Athletic Club on Friday evening, November 23, at 6.30 P.M., the attendance being the largest that we have had at any meeting, except the annual dinner. About sixty members were present, among whom were Colonel W. H. Bixby, '70, F. E. Levanseler, '71, F. K. Copeland, '76, and a representative of nearly every class down to the latest.

No outside entertainment was provided, as our committee believes these informal dinners should carry with them the full meaning of the word; and, if the attendance at this meeting is a criterion, the scheme has proven successful. F. K. Copeland, who had just returned from Boston, gave many news items, among others the status of affairs in general, the candidates for President, and also the agitation in regard to a new location. The keenest interest is taken in all the movements of the Corporation, and the news was welcomed. Others who spoke were Colonel Bixby, Hager, Woodman, and Huxley, who read a very newsy and interesting letter from "Ike Litchfield." With the aid of a piano and Young's voice the "Stein Song" and others were added to the program, which made the evening one of our best.

Preparations are afoot now to make the Annual Dinner, which comes the last of February, the largest in the history of the Association. Every Institute man is invited, and a notice to the secretary is all that is necessary.

JOHN T. CHENEY, '03, *Secretary,*
878 South Halsted Street, Chicago, Ill.

ROCKY MOUNTAIN TECHNOLOGY CLUB

The Rocky Mountain Technology Club had a dinner at the University Club, Denver, on Dec. 22, 1906, this being for the election of officers, etc. A very pleasant and informal time was enjoyed at this dinner. The election resulted in the following officers: president, F. E. Shepard, '87, Denver Engineering Works; vice-president, John E. Lonngren, '96, Colorado F. & I. Co., Pueblo; secretary-treasurer, Maurice B. Biscoe, Denver Club. By dint of questioning I succeeded in getting the following items, which perhaps will be of interest to some of the members:—

Messrs. Wiard, '99, and Brown, '05, have opened offices, with Denver as headquarters, for general consulting mining engineering business.

Mr. Lonngren, '96, is superintendent of the wire mill of the C. F. & I. Company at Pueblo.

Mr. Biscoe, '93, is located at Denver, in the line of architectural work, being occupied in the erection of the new St. John's Cathedral, which is to be quite a beautiful building.

Russell Reynolds, '06, is with the A. S. & R. Company, as chemist at its Durango plant.

Mr. Gilbert, '98, who was with the A. S. & R. Company at Eilers plant, has been transferred to the Durango plant.

Mr. Tuckerman, '06, is in the engineering offices of the C. F. & I. Company at Denver.

H. O. BOSWORTH, '02, *ex-Secretary*,
1742 Champa Street, Denver, Col.

THE TECHNOLOGY CLUB OF BUFFALO

The fall meeting was held on November 17 at the University Club, Buffalo. About fifteen were present, and every one enjoyed the opportunity of renewing old acquaintances and hearing the latest news from the Institute. Our next meeting will be held in January, and a large attendance is expected.

Our society now numbers about forty-five members, and is representative of almost every class from M. B. Patch of '73 to men of

the '05 class. The name has been changed to conform with the other Technology Clubs, and will hereafter be known as "The Technology Club of Buffalo."

H. A. BOYD, '79, *Secretary-Treasurer,*
125 Erie County Bank Building, Buffalo, N.Y.

THE WASHINGTON SOCIETY OF THE M. I. T.

Following a period of inactivity during the vacation season, when many of our members were away from the city, this society has seen a renewal of interest in its meetings during the last two months.

The regular annual meeting and banquet was held at the Hotel Cochran on December 12, and, as in former years, brought together a good-sized representation of resident alumni, in several features repeating the success of last year's gathering at the same place. The duties of toastmaster were again efficiently fulfilled by Mr. Marshall O. Leighton, '96.

A guest of the evening who was listened to with great interest was Professor R. S. Woodward, president of the Carnegie Institution, who gave a scholarly address on the general subject of "Technical Education," in which he showed himself to be thoroughly in sympathy with the spirit of the Massachusetts Institute of Technology. Himself a technical graduate in the earliest days of engineering as distinguished from classical college courses, and when there were absolutely no business opportunities open to an engineering graduate as such, he gave a vivid picture of the forces of prejudice which have always been opposed to the progress of technical education and the extent to which they have now been overcome. The Carnegie Institution itself stands for the promotion of the most advanced technical research; and President Woodward referred to the fact that at the present time the institution is engaged in the foundation on the Pacific coast of an astronomical observatory, at the head of which is an Institute of Technology graduate, who has become widely known for his work in astro-physics.

The society was fortunate in having also present as a guest at

the dinner Professor S. H. Woodbridge of the Institute Faculty, who is at the present time engaged in professional work on the House of Representatives Office Building in this city. From his intimate acquaintance with affairs in Boston, Professor Woodbridge was able to speak at length of many matters of interest to the society. It was especially gratifying to learn that the amount paid to the Treasurer of the Institute by the Technology Fund Committee has been enough to nearly meet the deficit for the past year.

Mr. Proctor L. Dougherty, '97, a member of the society who is frequently called to other parts of the country on professional work in the service of the government, gave his impressions of the growing importance and leadership of the Technology man in all departments of business and industry.

Dr. Henry A. Pressey, '96, a member of the society who has achieved prominence in engineering, financial, and educational circles in Washington, also made a brief address.

At the close of the meeting, subscriptions were taken up for a special fund, to be used by the Bursar of the Institute in furnishing aid to first-year students.

The officers elected for the next year are: Francis Walker, '92, president; Edwin F. Allbright, '04, vice-president; Frederick W. Swanton, '90, secretary; Francis F. Longley, '04, treasurer; Frederick G. Clapp, '01, director.

F. W. SWANTON, '90, *Secretary*,
1641 13th Street, N.W., Washington, D.C.

TECHNOLOGY CLUB OF NEW BEDFORD

The annual meeting of the Technology Club of New Bedford took place on November 1. The following officers were elected: president, Mr. C. F. Lawton; executive committee, Mr. S. C. Hathaway. The plans for the annual dinner were discussed, and the committee appointed to arrange for the dinner.

The annual dinner was held on December 4 at Tabitha Inn, Fairhaven, across the river. This is the new inn that Henry H. Rogers has just built. The guest of the club was Dean Burton,

of Tech, who spoke interestingly on the improvement of the social side of Tech life in the past few years. The even dozen who sat down to dinner enjoyed a very pleasant evening, and adjourned just in time to get the last car back to New Bedford.

C. F. WING, Jr., '99, *Secretary*,
34 Purchase Street, New Bedford, Mass.

THE TECHNOLOGY CLUB OF HARTFORD

The Technology Club of Hartford had its first meeting in the Rathskeller of the Heublein Hotel on Saturday evening, December 15. There was a large attendance present, and several new members joined the club.

Several members gave very interesting talks, and the discussion was entertaining as well as benefiting to the members. Light refreshments were served, and the meeting adjourned at ten o'clock.

GEORGE W. BAKER, '92, *Secretary*,
Box 983, Hartford, Conn.

NEWS FROM THE CLASSES

1868.

PROF. ROBERT H. RICHARDS, *Sec.*, Mass. Inst. of Technology, Boston.

At Technology Field Day the committee inaugurated the plan of suggesting that the various classes come to the Field Day sports. In answer to this three members of the class of '68 put in an appearance,—Jackson, Stevens, and Richards. Forbes was kept away by the fall of snow at his home, which, he thought, would spoil the sports. Stevens would have been kept away by the same storm but he found by telephoning that there was no snow in Boston. Richards has made one professional trip to Albany to consult about a mill process on the Pacific coast. He has also begun work on an appendix to his book on "Ore Dressing." It is now three years since the book appeared, and the progress in this line has been very rapid.

1870.

PROF. CHARLES R. CROSS, *Sec.*, Mass. Inst. of Technology, Boston.

Samuel Cabot died in Boston, November 26, of pneumonia after a short illness. The sudden death of our classmate will bring sadness to every one who has known him either in his younger days or in later manhood. The frankness and good cheer which characterized him when a student persisted through life, and every one who had to do with him was the better and stronger for such intercourse. He was a man who held tenaciously to his convictions on all subjects, but his actions were invariably based upon a strong sense of duty. He leaves behind him the memory of a life unsullied by the slightest taint of selfishness or unkindness.

1875.

E. A. W. HAMMATT, *Sec.*, 10 Neponset Block, Hyde Park, Mass.

Some weeks ago, on my way home from Mexico, I had the pleasure of spending a few hours with Ben. Oxnard in New Orleans. We had not met since June, 1875, and naturally each had changed somewhat in personal appearance. Ben was much interested to hear something of such of the boys as I could tell about. Cabot must be alive, as I found a postal from him on my desk when I reached home. I also found a report of the Commissioners of Sewerage of Louisville, Ky., supposed to have been sent by Breed, as he is their chief engineer. I have just learned that Bill Edes is appointed chief engineer of the Northwestern Pacific Railroad Company, with headquarters in San Francisco. Our classmate, Frederic Martin Palmer, born in Norton, Mass., Dec. 7, 1853, died in Lawrence, Mass., Oct. 25, 1906.

1876.

JOHN R. FREEMAN, *Sec.*, 145 Morris Ave., Providence, R.I.

On December 12 the class celebrated its thirtieth anniversary by having a dinner at Young's Hotel, at which the following members were present: Thomas Aspinwall, T. W. Baldwin, F. K. Cope-land, Henry B. Wood, F. W. Hodgdon, Charles T. Main, Charles F. Prichard.—On Jan. 7, 1907, the firm of Dean & Main was dissolved; and Charles T. Main, '76, will open new offices at 45 Milk Street, Boston, Mass., as soon as they are ready, and will carry on a business devoted to the design of industrial plants and work connected therewith.—The son of Charles F. Prichard, Charles R. Prichard, was married to the daughter of Benjamin C. Mudge, '77, Oct. 22, 1906.—The daughter of Arthur L. Mills was married Oct. 3, 1906.—John R. Freeman has recently returned from several weeks of investigation of Los Angeles' heroic project for water supply from the Owens River, which proposes

an aqueduct two hundred miles long, conveying four hundred cubic feet of water per second for domestic supply and irrigation. The aqueduct starts at an elevation of 3,820 feet above sea-level, near the base of Mount Whitney, the highest of the Sierras, and follows along the base of the eastern foothills of the Sierra, and along the edge of the Mohave Desert, until it crosses under one of the Sierra Madre ranges, with a five-mile tunnel, and there drops some fifteen hundred feet in a steep canyon, affording an exceptionally attractive site for water-power development, after which the water will pass on through other tunnels and conduits to the head of the San Fernando watershed, from which Los Angeles is already supplied. In addition to supplying water for the million inhabitants that Los Angeles expects to have at some future time, there will be water enough to irrigate one hundred thousand acres for intensive farming, like the cultivation of olives, oranges, and vineyards, and thus to develop the equivalent of four "Riversides" in the suburbs of Los Angeles. The water and the fall will permit the development of from fifty thousand to one hundred thousand horse power of electrical energy, as measured at the consumers' end in Los Angeles, or more power than all that developed at Lawrence, Lowell, Manchester, and Holyoke combined. This will doubtless be a great factor in the industrial development of Southern California and the building of factories in the vicinity of Los Angeles. Mr. Freeman was serving as one of a commission of three engineers to report on the feasibility and cost of the project. Mr. Freeman continues as consulting engineer to the Board of Water Supply, New York, and in charge of the Factory Mutual Insurance interests in Providence, with which he has long been identified.

1877.

RICHARD A. HALE, *Sec.*, Lawrence, Mass.

Benj. C. Mudge is associated with the Oxford Fibre Company, with mills at Gardner, Mass. The Boston office is 85 and

86 Delta Building, 10 Post-office Square. The company utilizes the waste products from flax-making yarns that can be used in many articles, as twine, harness, and shoe thread, etc.—Fred. W. Wood has recently been elected a member of the Executive Committee of the Corporation.—F. C. Holman has been located in South America for many years, and at present is at Bolivar, Sur de Cauca, in Colombia, engaged in gold mining. He has made a special study of the geological features of that portion of country. His home is at San Francisco, and the old homestead was destroyed by dynamite to prevent the spread of the flames at the time of the earthquake. His mother had made this her home for more than fifty years. Everything was practically destroyed.—George F. Swain is acting as consulting engineer for the Bridge Commission in Lawrence, Mass., which is to report on the feasibility of a new highway bridge across the Merrimack River, between the two bridges at present existing.

1878.

LINWOOD O. TOWNE, *Sec.*, Haverhill, Mass.

With a thoughtfulness that the class has been made to realize for many years, President Baker was the host at his Ivy Street, Brookline, home for the annual dinner and reunion. This was held January 5. Present were (besides Baker) Bradford, Collier, Draper, Higgins, Miller, Nichols, Rich, Robertson, Rollins, Sargent, Sawin, Schwamb, Williams, Woolworth, Towne. Mrs. Baker assisted in receiving the men, but to their regret withdrew from discussing the after-menu. The meetings of the class have been informal for years, and in its most delightful way was the same this. The Lieutenant Governor had to answer—or attempt to—a lot of questions which, as a member of Tech Corporation, he never had on M. I. T. exam. papers. Around the logs of the great fireplace in Baker's music-room, after dinner, the fellows talked of about everything, from early days and affairs political to "Trinity." It was pretty hard to leave.

1883.

HARVEY S. CHASE, Sec., 27 State Street, Boston.

Rufus F. Herrick has recently organized the "Somerset Springs Company," to manufacture and sell carbonated beverages throughout New England. Mr. Herrick has special chemical formulæ for such products under requirements of the new pure food laws.

1884.

PROF. WILLIAM L. PUFFER, Sec., 307 Equitable Building, Boston.

Edward V. Sedgwick was in Boston, and called on Tyler, who says he looked much as he did way back in the 80's, and presumably is prospering, as he left a check for the class secretary to square up all dues. The secretary hopes a good many fellows will call on Tyler.—A good bit of class news is conveyed in the following clipping from the Boston *Transcript* of December 15:—

Abbott L. Rotch, director of the Blue Hill Observatory and one of the leading meteorological experts of this country, has been appointed professor of meteorology at Harvard by the Harvard Corporation.

Professor Rotch has for nearly a quarter of a century been conducting exhaustive scientific investigations into the celestial world, working both here and abroad. Universities of Germany, France, and England have honored him with high degrees. He has made several important discoveries, and contributed many useful books on meteorological subjects.

Graduating from Technology in 1884, Professor Rotch early won a reputation as a student of the stars. After two thrilling expeditions to South America and Africa, where he hazarded the dangers of mountains, he established in 1885 the Blue Hill Observatory, and has since maintained it.

About that time he published a book, graphically written, entitled "Sounding the Ocean of Air," that has since been used as a text-book in many leading colleges and schools. Because of it he became editor of the *American Meteorological Journal*, which position he held with distinction for a decade.

—William L. Puffer recently opened an office for the transaction of an engineering business at 307 Equitable Building. He will give special attention to expert testimony in law cases, examinations, choice and layout of new systems, reports and tests of plants, etc.

1885.

I. W. LITCHFIELD, Sec., 161 Devonshire Street, Boston.

The Boston *Transcript* of October 24 reports that the Confectioners' Machinery and Manufacturing Company of Springfield, of which Frank Page is president, has purchased 190,000 square feet of land as a site for a new factory. The company will not build immediately, but in time will doubtless cover practically the whole tract with a large modern factory, thus establishing one of the greatest plants in the country for the manufacture of confectioners' machines and apparatus. The Confectioners' Machinery and Manufacturing Company is allied with one of the greatest machine manufacturing companies in Paris, France, and the two concerns send their machines all over the world. The company is successful to a very marked degree.—The board of managers of the National Society for the Promotion of Industrial Education held a meeting in the office of the Carnegie Foundation, New York City, December 8, and elected Professor Charles R. Richards, of Columbia University, secretary. Dr. Pritchett is president of the society. Professor Richards has been very prominently identified with this movement from its inception, and the great success of the movement has been largely due to his energy and ability. Professor Richards was in Boston attending the Social Educational Congress, and presided at the sessions of the section on industrial education.—The Boston *Herald*, December 23, had an article descriptive of "The Haunt," the historic dwelling owned by General W. E. Spaulding, of Nashua, N.H. The house was built in 1740, and contains General Spaulding's collection of antiquities. On the way to camp at Squam Lake by

automobile, two years ago, some of the men made a call on Billy Spaulding, and were initiated into the mysteries of the old house. It was filled from cellar to garret with old furniture, china, and domestic articles of every description. The collection is extremely valuable, and has been drawn on from time to time by the various antiquarian societies in this country. It has been, however, a very great care; and his decision to dispose of a part of the collection was a gratification to collectors. The house will probably be secured by one of the historical societies in Nashua.—W. J. Mullins, of Franklin, Pa., was in Boston in November, and made a few calls on '85 men. He was in excellent health and very enthusiastic over his new White Steamer, in which he has spent most of the summer.—Professor Tyler, having resigned the secretaryship of the Faculty, Professor Merrill has been elected secretary. It will be remembered that Merrill was acting secretary for some time when Dr. Tyler was in Europe, and on account of his duties was unable to attend the reunion. We congratulate Merrill on his election as secretary, and hope that he has made a stipulation that no Institute work is to interfere with any class functions.—C. M. Wilder visited some of his classmates in Boston last summer on his way to Cape Cod, where he spent his vacation.—Newell was in Boston recently, attending a meeting of the Corporation of the Institute.

1887.

EDWARD G. THOMAS, *Sec.*, 88 Broad Street, Boston.

John W. Adams, who is now assistant to Mr. Samuel Stickney, general manager of the Chicago Great Western Railway, St. Paul, Minn., was in Boston in November for a short visit.—Solomon Sturges is recovering slowly from the effects of the automobile accident, which was noted in the last issue of the REVIEW. He has not yet been able to return to his office, and will probably recuperate for some time in the South before being able to take up business affairs.—Timothy W. Sprague will move on February

1 from his present quarters, 4 State Street, to 88 Broad Street, Boston. Sprague, in association with Charles K. Stearns, is engaged in the installation of several large electric plants for the distribution of power for coal mining purposes, in the New River district of West Virginia.—Charles K. Stearns will also shortly move to 88 Broad Street, Boston.—Our twentieth anniversary will be celebrated at Chebacco Island, Essex River, Mass., June 15, 16, and 17, 1907. The committee is hard at work on plans to make this the biggest, busiest, and best outing we have had.—C. A. Barton, Eastern agent for the Nernst Lamp, has had the territory extended over which he has charge, and now controls the Eastern States as far South as Virginia. He has recently moved the Nernst office to 124 W. 42d Street, New York.

1888.

WILLIAM G. SNOW, Sec., 1108 Penn Mutual Building, Boston.

The secretary regrets to report the death of Frederick L. Sayer, which occurred in the Brooklyn Hospital, November 23, from grippe and complications.—Charles L. Weil has resigned his professorship at the University of Michigan, in order to devote his entire time to his consulting engineering practice. His offices are located in the Union Trust Building, Detroit.—B. G. Buttolph and William G. Snow were present at the annual meeting of the American Society of Mechanical Engineers in New York in December.—The *Inland Architect* for November gives a full-page exterior view of the new James H. Bowen High School, Chicago, designed by Dwight Heald Perkins, architect for the Board of Education.—In the absence of Professor Woodbridge, William G. Snow has given a course of lectures on "Heating and Ventilation" to the third-year architects.—George C. Scales returned from Porto Rico several months ago, and became associated with the Stone & Webster Engineering Corporation. He is now located in Columbus, Ga., as superintendent of construction of a large power plant.

1889.

PROF. W. E. MOTT, *Sec.*, Mass. Inst. of Technology, Boston.

At the annual meeting of the American Society of Mechanical Engineers, recently held in New York City, George M. Basford was elected one of the managers of the society. Basford has recently delivered an address before the students in engineering of Purdue University, on "The Work of the Motive Power Officer in the Management of American Railroad Operation."—The Boston *Transcript* of October 18 contains the following note in regard to C. N. Borden:—

At a special meeting of the directors of the Richard Borden Manufacturing Company, Charles N. Borden was regularly elected treasurer, clerk, and a director of the corporation to succeed his father, Richard B. Borden, who died a few days ago. Mr. Borden had been performing the duties of the position during the illness of his father, and his appointment was generally expected as the successor of the latter.

A second edition of "Mechanics Problems for Engineering Students," by Professor Frank B. Sanborn, of Tufts College, has recently appeared from the press of J. Wiley & Sons.—A. W. French, president of the French Oil-mill Machinery Company of Piqua, Ohio, writes:—

Our company has all the business it could possibly attend to. We are still in the same old business, and have enlarged our plant and equipment nearly 100 per cent. this summer.

—*Engineering Magazine* says:—

Mr. G. W. Whipple has been recently appointed by the Merchants' Association of New York on a committee to inaugurate a campaign against the pollution of rivers. The firm of Hazen & Whipple has been retained by the city of Brisbane, Australia, to report on sources of water supply for the city.

1890.

GEORGE L. GILMORE, Sec., Lexington, Mass.

Darragh de Lancey is in Waterbury, Conn.—George E. Hale and wife were in Boston a week in November. He has now returned to Pasadena.—C. C. Babb is with the United States Reclamation Service in Browning, Mont.—Henry Plympton Spaulding, who with his family returned from a year's sojourn in Italy recently, has taken a studio at 320 Boylston Street. His year's work in Italy amounted to over one hundred water-colors. His first exhibition of the season was held from December 5 to 19. Mr. Spaulding is building a new house and studio at East Gloucester, which he expects to occupy next summer.—Walter F. Cook can now be found at his new restaurant, 88 Boylston Street, Boston.—Charles H. Alden, who was in California last summer, is now in Boston. After completion of the Harvard Medical School Buildings, of which he had charge, he severed his connection with Shepley, Rutan & Coolidge, and is now in business for himself at 20 Beacon Street.—E. A. Emery is at 1417 Railway Exchange, Chicago, Ill.—S. W. Moore is now at 173 Oakleigh Road, Newton, Mass., having been in Colorado Springs most of the time the past sixteen years.—A. W. Woodman is now in Chicago, at 906 Tribune Building.

1891.

HOWARD C. FORBES, Sec., 88 Broad Street, Boston.

Garrison has just resigned his agency of the De Laval Steam Turbine to go with the Choralcelo Manufacturing Company as consulting engineer. The Choralcelo Manufacturing Company is producing a new musical instrument, possessing many marvellously interesting qualities. Its importance in the musical world cannot be exaggerated. It is being shown only privately, and Garrison will be

pleased to have any one interested either call upon him or telephone him at his new office, 33 Broad Street, Boston,—Telephone 1010 * Main,—and he will arrange for a private hearing.

1892.

PROF. WILLIAM A. JOHNSTON, *Sec.*, Mass. Inst. of Technology,
Boston.

As a result of the recent vote for term members, the name of Leonard Metcalf will be presented to the Corporation.—One of the recent publications was written by Louis Derr. Subject, "Photography for Students of Physics and Chemistry." The book is published by the Macmillan Company of New York.—Prescott A. Hopkins, architect, has recently removed his office to 801 Provident Building, 50 South Fourth Street, Philadelphia, Pa.

1893.

FREDERIC H. FAY, *Sec.*, 60 City Hall, Boston.

Orton W. Albee has recently been engaged in a mining venture which, through his efforts, has turned out very handsomely, although last year he came near paying dearly for his experience. Early in 1905, while associated with Charles C. Bothfeld, '84, in Detroit, he met a Canadian railway engineer who had been building a government railroad through the backwoods of Ontario, and who brought rumors of the finding of silver along the line. After some investigation which seemed to confirm the report, Messrs. Bothfeld and Albee and two or three others organized a prospecting party, which went into the woods over this railway line, riding in a freight train, as passenger service was not yet in operation, and alighted at what has since come to be the widely known town of Cobalt. After three hours of prospecting the party discovered traces of silver; and the next day, by the use of dyna-

mite, a vein was exposed. Albee was put in charge of the development of the property, which was named the Violet Mine; and, although his resources were the most primitive, and the only labor to be had was that of lumbermen who knew absolutely nothing of mining, the undertaking was successful from the start, and the first shipment of ore proved the worth of the mine. Albee continued to work the property from the spring of 1905 to the fall of 1906, spending practically his entire time, winter and summer, at the mine. By the summer of 1906 the town of Cobalt had developed to such an extent that Mrs. Albee and their daughter were able to join him, which was a most fortunate circumstance, for in the early fall Albee suffered from a very severe attack of ptomaine poisoning, due to eating canned goods; and it was only by Mrs. Albee's skilful nursing, followed by medical aid from Detroit, that he pulled through. When Albee was able to travel, he and his family went to Mrs. Albee's home in Newark, N.J., where he completely recovered from his illness. Late in the fall the mine was sold at a handsome profit to its owners. Albee now resides at 98 Bloomfield Avenue, Newark; and he is engaged in private practice as a consulting mining engineer at 20 Fulton Street, New York City.—Herbert W. Alden, for many years engineer with the Pope Manufacturing Company of Hartford, Conn., is mechanical engineer with the Trinken Roller Bearing Axle Company of Canton, Ohio, his address being 1361 Woodland Avenue, Canton.—The address of Charles V. Allen, engineering salesman with Westinghouse Electric and Manufacturing Company, is Cadena 19, Mexico, D.F., Mexico.—Frank S. Badger is principal assistant engineer of the Monterey Works and Sewer Company, Limited, his address being Apartado 291, Monterey, Mex.—Frederic W. Baker's address is Box 256, Bridgeport, Conn. He is still naval architect for the Lake Torpedo Boat Company.—William Thomas Barnes and Miss Maude Frances Getchell, of Waterville, Me., were married in that city on Oct. 17, 1906. Mr. and Mrs. Barnes reside at 566 Blue Hill Avenue, Dorchester, Mass. Barnes is assistant engineer to Leonard Metcalf, consulting engineer, at 14 Beacon Street, Boston.—Maurice Bigelow Biscoe and

Miss Agnes Elizabeth Slocum, daughter of Mr. and Mrs. Winfield Scott Slocum, were married at Newtonville, Mass., Nov. 24, 1906. Mr. and Mrs. Biscoe will reside at 790 Dowing Street, Denver, Col., in which city Biscoe is practising his profession of architecture.—Samuel N. Braman, with the Westinghouse Machine Company, has been transferred to Philadelphia, and is now located at 1006 North American Building, Philadelphia, Pa.—Charles Nourse Cook is located at Slatersville, R.I., where he is superintendent of the Slatersville Finishing Company. He continues also to be president of the Silver Spring Bleaching and Dyeing Company of Providence.—The address of Charles D. Demond, testing engineer with the Anaconda Copper Mining Company, is 704 Main Street, Anaconda, Mont.—Mrs. Frederick N. Dillon, of Fitchburg, Mass., was instantly killed in an automobile accident near Wayland on the afternoon of Oct. 18, 1906. Mrs. Dillon was Margaret Downes Morse, daughter of George F. Morse, of Leominster. She was married to Frederick Nathan Dillon, Nov. 9, 1898.—Samuel D. Dodge, assistant engineer with the New York Board of Water Supply, is located at Cornwall-on-Hudson, N.Y.—William G. Houck, formerly secretary-treasurer, is now president of the Buffalo Structural Steel Company. Houck's address is reported as 551 La Fayette Avenue, Buffalo, N.Y.—Arthur H. Jameson is superintendent of the steel castings department of the Malleable Iron Fittings Company at their large new Branford plant. Jameson's address is Box 612, Branford, Conn.—John W. Logan is with the steel works department of the Alan Wood Iron and Steel Company at Conshohocken, Pa.—At the annual meeting of the Corinthian Yacht Club^{of} Marblehead, held at the Boston Athletic Association on January 9, Henry A. Morss, commodore in 1906, was re-elected commodore of the club for 1907. Reports of committees showed that the club had been very prosperous during the first year of Morss's administration; and it begins the present year with a most flattering outlook for a record season both in membership and in social and yachting features. In his annual statement Commodore Morss made the important suggestion that the club begin

collecting data about past and present boats. He said: "I think the club should keep for future reference records of boats and yachts which have been built, leading up to the development of the present fleet. I feel reasonably certain that there are in the possession of a good many members models or half-models for which they have no particular use at the present time. These models, if in the possession of the club, would show more clearly than anything else could the various types of yachts which have been enrolled in the club since its organization. Plans giving lines, sail plans, and cabin arrangements would also show a great deal. My suggestion is that members who have such models or plans present them to the club, for such a collection would be of great interest and value."—Fenwick F. Skinner, civil engineer with Westinghouse, Church, Kerr & Co., is the resident engineer in charge of the construction of the new Pennsylvania Railroad Terminal in New York City. Skinner's field engineering staff numbers over sixty men. A part of the work consists in placing some fifty thousand tons of structural steel below the surface for the support of the proposed station building and adjacent streets. Skinner's address is 227 West Thirty-third Street, New York City.—The address of Walter I. Swanton is Sixth Floor, Munsey Building, Washington, D.C. Swanton is now construction engineer with the United States Reclamation Service.—Alfred C. Thomas, engineer with the New York & New Jersey Telephone Company, is located at 15 Dey Street, New York City.—The present address of Percy H. Thomas, chief electrician with the Cooper-Hewitt Electric Company, is 111 Broadway, New York City.—Augustus B. Wadsworth, M.D., formerly at 112 West Fifty-fifth Street, is now in practice at 180 West Fifty-ninth Street, New York City.—Parker H. Wilder, formerly secretary of the Choate School at Wallingford, Conn., is now treasurer of that institution.—The following '93 men attended the alumni dinner January 18: S. A. Breed, Blood, Dawes, Densmore, Ellms, Fay, Keyes, Pickert, and Tucker. Ellms, who is located at Cincinnati, arranged a vacation trip so as to be present at the dinner.

1894.

PROF. S. C. PRESCOTT, *Sec.*, Mass. Inst. of Technology, Boston.

C. F. Hopewell is at work on a new type of small gas engine for motor cars and similar purposes.—W. W. Patch is still engaged on the work of the Reclamation Service, and is now located at Orman, S. Dak.—George Taylor has become connected with the General Electric Company, and now lives at 13 Bedford Road, Schenectady,—J. E. Thropp, Jr., is in charge of the mines and smelters of the Everett Company, and is now located at Earlston, Pa.—A. W. Tidd was married during the summer, and now lives at White Plains, N.Y. Tidd has been for some time an assistant engineer on the new water supply work for the city of New York.—Mrs. De Lancey has removed from Great Barrington to Waterbury, Conn.—R. W. Gilkey has left Boston to accept a position in New York State. His address is 20 Lafayette Avenue, Kingston, N.Y.—J. W. Kittredge has opened an office in Boulder, Col.—C. F. Baker has joined the forces of the J. G. White Company in New York City.—W. H. King has recently taken possession of a splendidly equipped office in the new Hall of Records in New York City.—The secretary recently visited the Tech Club of New York, and happened to be present at the night for the reunion of '91, '92, '93, and '94. The occasion was a very pleasant one, as it gave opportunity to renew several old friendships. Of the class of '94, King, Locke, McJennett, N. E. Janvrin, and Prescott were present.—H. R. Bates is now located in Wilmington, N.C.—The secretary was pleased to receive a letter from R. H. Ober, who was connected with the class in the Freshman year. Ober is now engineer of the Columbia River Bridge for the C., M. & St. P. Ry. Co. of Washington, and his address is Trinidad, Wash.

1895.

H. K. BARROWS, Sec., 6 Beacon St., Boston, Mass.

T. M. Lothrop's address is now 648 Fourth Avenue, Joliet, Ill. He is assistant superintendent of the spike and bolt factory, Joliet Works, of the Illinois Steel Company.—E. D. Barry has been also with the Illinois Steel Company, as assistant superintendent of their Cement Plant No. 2, but is now superintendent of the Universal Portland Cement Company at South Chicago, Ill.—S. H. Thorndike, who has been Instructor in Civil Engineering at the Massachusetts Institute of Technology for the last two years, is now in the bridge department in the office of the city engineer of Boston.—B. C. Donham is chief engineer for Collbran & Bostwick, general and railway contractors of Seoul, Korea. News comes of a daughter born November 13, and it is needless to say that "Ben" is proud and happy. Just now he is too busy to write,—building a water-works system for Seoul, among other things,—but the secretary hopes to have a "foreign letter" from him by our next issue.—C. F. Tillinghast, in his racing sloop, "Little Rhody," had a close call in a recent trip around Cape Cod, according to the Boston *Globe* of October 14. He left Marblehead with a party of four on October 5, and reached Bristol, R.I., on the 10th, having had to stop at Provincetown for over twenty-four hours during a hard gale. One of the party reported "that the 'Little Rhody' was the best sea boat he ever saw. Had it not been for her small cockpit, with a high sill to the cabin door to keep water from below, he believes the boat would have foundered in the terrific sea Sunday night, as the cockpit was full of water most of the time. All hands had life-belts strapped around them, and were wet through all night. It was a time of stress and anxiety, in weather that would have sent a less stanchly built boat to the bottom." The "Little Rhody" was built at Bristol, R.I., in 1904, from designs by George Owen. She won the race from New York to Marblehead that year, and has won several other long races.—

R. J. Williams is happy in the advent of "R. J., Jr.," born last July. Williams has been with Draper Brothers Company, woollen manufacturers, at Canton, Mass., since graduation. He married Miss Jeanette Wild, of Canton, Sept. 20, 1905.—H. M. Crane is now at 532 Fifth Avenue, New York.—E. C. Alden reports change of address to Hotel Lincoln, Columbus, Ohio, where he is engaged with the American Telegraph & Telephone Company.—A. D. Dean has been at 167 Tremont Street, Boston, since May 1; and the following, taken from *Two States*, indicates the larger field of usefulness to which he has been called:—

Mr. A. D. Dean, formerly assistant principal of the Springfield Technical High School, has been elected by the State Committee, Y. M. C. A., of Massachusetts and Rhode Island, as special supervisor of the educational department. This comes as the direct result of an effort of a few business men, who propose to largely back the educational work of the committee for a term of three years. It is the conviction of these men that furnishing evening instruction for industrial workers is the Association's opportunity to be of larger service to cities and towns which have neglected to provide for the vocational needs of men employed in our great manufacturing, as well as Association, centres.

Mr. Dean is well known as an expert on industrial education. After graduating from the Rindge Manual Training School, Cambridge, he entered the Massachusetts Institute of Technology, receiving his degree in 1895. His first work as a teacher was in manual training at Portland, Me. Later he organized and directed manual training in the Malden schools, and from there he was called to the Springfield Technical High School, with which he has been connected for eight years. Mr. Dean was associated with Dr. Balliet, former Superintendent of Schools in Springfield, and Mr. Warner, the present principal of the Technical High School, in organizing the Springfield Evening School of Trades, the work of which he has largely directed. He was sent by the United States government to investigate industrial conditions in Porto Rico, and for a number of years he has been an examiner for the International Committee. Mr. Dean begins work under the committee May 1, receiving leave of absence for part of July and August, to direct shop practice and manual training in Cornell University Summer School. The associations of Massachusetts and Rhode Island are very fortunate in being able

now to command the assistance of Mr. Dean in improving and enlarging their educational enterprises.

A. D. Fuller, as treasurer of the Andrew D. Fuller Company, of 3 Hamilton Place, Boston, is giving especial attention to foundation and substructure work, his firm being that of contractors and engineers. They also make a specialty of the entire development of country estates, and have done a large amount of this work for private parties here in New England, particularly along the North Shore in Massachusetts. They have an office at Greensboro, N.C., and work along the same general lines in that vicinity. The work that they have done in the line of concrete foundations, granolithic pavements, etc., is in many cases the first of its character in that part of the South.—G. E. Harkness was elected a member of the Boston Society of Civil Engineers on November 21. He has been in Boston and vicinity since graduation, with the city of Medford, Boston Transit Commission, Charlestown Bridge, and is now assistant engineer on the new Cambridge Bridge, at 185 Charles Street, Boston.—E. A. Tucker is at 683 Atlantic Avenue, Boston, and is engaged principally in the design of steel work for buildings, although he acts as consulting engineer on other general features of structural building work, foundations, etc. Reinforced concrete design has occupied his attention considerably during the past year or two, and he acts as New England representative for the Expanded Metal and Corrugated Bar System of St. Louis. Some of his recent work has been on the steel design and supervision of the car and locomotive repair shops of the Bangor & Aroostook Railroad at Milo Junction, Me; reinforced concrete design and supervision of construction of warehouse on Kneeland Street, for the Boston & Albany Railroad; consultation work on John Hancock Building and Weeks Building in Boston, and various other buildings and bridges. Tucker has just been elected a member of the American Society of Civil Engineers.—F. A. Bourne is also "doing things" in Boston and vicinity. His office has been in the Mason Building for about five years. One of his latest designs, that of St. Luke's Church on Washington Avenue, Chelsea, is attracting wide attention.

Bourne gave considerable study to the manner of the use of concrete for this structure, and it is reported by experts to be the best example anywhere about here of cast stonework. The result is superior in texture to the manufactured stone now being used in the new West Point buildings. The interior of the church shows the finished stone jointing, and the cast stone window tracery receives the leaded glass without surrounding woodwork. The floors are granolithic, and there is no plastering in the building. The effect is very dignified, and obtained at a very small expense compared with other methods of construction.—M. M. Cannon has just been made a member of the American Society of Civil Engineers. He is civil engineer for the Fore River Shipbuilding Company, and has had direct charge of all construction work connected with their great shipyard near Quincy, Mass. During the past year, in addition to this, he has designed and constructed the new terminal docks of the Atlanta, Birmingham & Atlantic Railway at Brunswick, Ga.—It is expected that the '95 class panels for Huntington Hall frieze, which the class authorized at the annual meeting, will be commenced shortly after the midyear vacation.

1896.

EDWARD S. MANSFIELD, *Sec.*, 70 State Street, Boston.

The decennial of the class of '96 has passed into history, and yet the catalogue has not made its appearance. This is not due to the lack of energy on the part of the committee, but to the lack of interest shown by many '96 men. The committee is anxious to produce a complete, first-class book, and it is not willing to go ahead with only half the information in hand. So wake up, men of '96! Take a little interest in the matter, and the committee will show you what can be done if all co-operate.—C. K. B. Nevin was married on Oct. 27, 1906, to Miss Mary E. Saltonstall, of New York.—On November 21 H. W. Brown lost his daughter Constance, and on December 25 Dorothy, his youngest daughter,

died.—Frank E. Guptill, formerly of the Mutual Assurance Society of Virginia, has been associated with J. G. White & Co. of New York since July, 1906. He has been spending about six weeks in and around Boston, visiting old acquaintances and friends, and early in February is to go to Olongapo in the Philippine Islands. At this place, which is near Manila, is to be located a United States Naval Station for coaling purposes, and for about eighteen months Guptill will be engaged in installing a central station and erecting hoisting apparatus.—Leland has been appointed Assistant Professor of Naval Architecture at the Institute, and Locke has been made Assistant Professor of Mining, Engineering, and Metallurgy.—Albert A. Chittenden, an artist of New York, died in that city on Jan. 9, 1907.—Mrs. Marion L. Chamberlain has left the library at Columbia University, and is now located at the New York Society Library of New York City.—Willard H. Colman, formerly manager of the Ralston University of Expression at Washington, is now taking a course in the new science of chiropractic at the parent school at Davenport, Ia. His home address is 1319 State Street, La Crosse, Wis.—News from J. W. Clary, of Washington, D.C., states that he is married, and has a son four months old.—F. H. Smith has left the Fisk Rubber Company of Chicopee Falls, and is now connected with the Boston Woven Hose and Rubber Company of Cambridgeport. He is living in Cambridge.

1897.

JOHN A. COLLINS, JR., *Sec.*, 74 Saunders Street, Lawrence, Mass.

Carroll A. Capen (X.) was married on October 15 to Miss Lucy Chadsey Oliver, of Bath, Me.—Charles B. Breed (I.) and George L. Hosmer (I.) Instructors in Civil Engineering at the Institute, have recently issued a text-book, "The Principles and Practice of Surveying." The subject is treated quite exhaustively, the book having 526 pages and 192 cuts. It is published by John Wiley

& Son, New York.—The following sad news of W. H. Cutler's death has been reported, and a letter which appeared in the Kansas City *Star* (Jan. 10, 1907), written by his two associates, one of whom was a classmate of his at the Institute, is published below:—

FROM W. H. CUTLER'S ASSOCIATES.

To the Star:—

The death of Mr. William H. Cutler, junior partner of the firm of Howe, Hoit & Cutler, occurred on Monday morning last, after a brief illness of a little more than two weeks, and came as a shock to his friends, many of whom were not aware that he was ill. By this untimely shortening of his useful and promising career the profession of architecture has lost one who, had he been permitted to complete his natural allotment of years, would have made for himself a high and permanent place in it.

Mr. Cutler was thirty-two years and six months old, and was born in Cincinnati, but passed most of his life in Chicago, where he received his early training in the public schools and in the Chicago Manual Training School. Later he entered the Massachusetts Institute of Technology, where after a full four years' course in architecture he graduated with honors, and shortly after entered one of the larger Chicago offices. From this office he came to Kansas City in 1900, entering the office of Van Brunt & Howe. In 1903 he was admitted to the firm, succeeding to the business of Van Brunt & Howe, and, as a member of it, had practised his profession here up to the time of his death.

He was a brilliant draughtsman and colorist, thoroughly trained in construction and detail; and, although of a very quiet and retiring disposition, he made many warm friends, both in the profession and out of it. His tactfulness in handling men was remarkable; and, with his kindly way, he managed to secure results and at the same time win the respect and confidence of those with whom he came in contact.

Above all, his character, both public and private, was irreproachable, and his ideals of the highest. In his too brief career he made for himself many friends in and about Kansas City, and in the work of the office his personality has been of the most engaging kind. His employees miss him not merely as an employer, but as a friend; and many a young man, both in the office and out of it, owes to Mr. Cutler a debt of gratitude for his kindly help over hard places of architectural training. He was a well-known member of the Country Club and the University Club and a Scottish Rite Mason of the thirty-second degree. No one will miss him more or appreciate more

fully his sterling worth than do his business associates, and none will more sincerely mourn his loss. Mr. Cutler leaves a father and mother of advanced age, who live in Chicago, and two brothers.

FRANK M. HOWE.
HENRY F. HOLT.

1898.

PROF. C.-E. A. WINSLOW, *Sec.*, Hotel Oxford, Boston.

Sturtevant is spending a sabbatical year in studying at Harvard University. He writes to the secretary to announce the birth of a daughter, Constance, on November 27.—Chace has moved to Tucson as office engineer of the Gila Valley, Globe & Northern Railway Company. His address is Box 553, Tucson, Territory of Arizona.—Allyn has left Mitchell, Bartlett & Brownell, to open an office of his own, for the practice of patent, trade-mark, and copyright law, at the Broadway Chambers, 277 Broadway, New York.—Goodrich was married on October 20, at Stockbridge, Mass., to Miss Cora Edith Smith, daughter of Mr. and Mrs. John F. Smith.—C. W. Wilder has moved from 91 Pineapple Street to 394 East 21st Street, both of Brooklyn, N.Y.—Pen Dell has left the Western Electric Company to take a position with the North Shore Electric Company, with headquarters at the Chamber of Commerce, Chicago.—Hürter has taken a long jump from his last position in the field, which was at Orseco, Ore., to Wilmington, Del., where mail will reach him at Box 692.—Alexander sends a new address at Christ Church Rectory, Springfield, Mass.—Gilbert has moved from Pueblo, Col., to Durango in the same State. His address is 1404 Third Avenue.—New addresses have recently been received, as follows: Shaw is now at 32 Oakland Street, Newburyport, Mass.; Fearing, at Mt. Joy Place, New Rochelle, N.Y.; Ferguson, at 633 Law Building, Norfolk, Va.—Hubbard has just been transferred from West Hurley, N.Y., to Kingston, N.Y., where his address is 133 Fair Street. He is in the employ of the Board of Water Supply of New York, and has been doing notably able work, assisted by a number of younger

Tech men. At West Hurley he was assistant division engineer of the Eastern Division, in charge of the office. This last summer his work consisted in making an accurate topographical survey of the basin for the proposed additional water supply for the city, together with the work of relocating the Ulster & Delaware Railroad, which runs through the site of the proposed reservoir, and the estimates for the cost of building dikes, etc., in regard to their capacity.—Plans submitted by Pratt for a sewage disposal plant for the city of Washington, Pa., were adopted by the borough council without a dissenting vote. Bonds for \$78,000 were authorized for the construction of the plant, and Pratt's plans met with much favor from the city authorities and from the press. They were approved by the State Board of Health without any suggestions whatever, being the first plans so unqualifiedly accepted by the board. Pratt's work as engineer of the State Board of Health of Ohio, which has general supervision of the water supplies and sewerage system of the State, is bringing that State well to the front in the provision of pure water and the treatment of sewage and industrial wastes. The engineering department of the Ohio Board of Health is, indeed, entirely made up of Tech men. Its force consists of Pratt, '98, chief engineer; Kimberly, '97, Burgess, '99, and Hansen, '03, assistant engineers; and Hinckley, '06, engineering assistant. In addition, the city of Columbus, the capital of Ohio, is undertaking at the present time extensive improvements in providing a pure water supply and in purifying the city sewage. This work for the city is being carried out almost entirely by Tech men. Gregory, '95, is engineer in charge, with Howe, '95, De Berard, '99, Pearse, '01, and Belcher, '03, assistant engineers.—Shute, '01, is with a firm of practising sanitary engineers located in Columbus. Technology may well be proud of the part she is playing in protecting the public health in this State.—Lansingh, besides filling his position as engineer and general manager of the Holophane Glass Company, sales department, has been reading numerous papers before engineering societies and contributing articles to the technical press. Among other papers recently given before the technical societies may be mentioned "The Engineering of Illumination

from the Gas Engineer's Standpoint" before the Western Gas Association at Cleveland in May, 1906; "The Standardization of Incandescent Gas Mantles" before the Gas Institute at Chicago, October, 1906; "The Engineering of Illumination from the Standpoint of the Acetylene Engineer" before the International Acetylene Association at Atlantic City in July; and "A New Method of Lighting the Streets of Los Angeles" before the Illuminating Engineering Society, in June, 1906, in conjunction with Mr. Western Underwood. Among articles in the technical press during the year may be mentioned "Calculation of Illumination" (the *Illuminating Engineer* for October) and articles, in conjunction with Mr. J. R. Cravath, on the question of lighting different classes of buildings, which have appeared monthly in the *Electrical World*. In addition to the above there will be issued about the first of the year a book entitled "Practical Illumination," by Mr. J. R. Cravath and V. R. Lansingh, which will cover the subject, not only from a theoretical, but also from an extremely practical standpoint. This book contains several hundred illustrations and practically all the reliable photometric curves which have been collected in this country. Lansingh is also treasurer of the Illuminating Engineering Society, which, although only formed last January, now numbers over 850 members, with branches in New York, Boston, Philadelphia, Pittsburg, and Chicago.—Packard, as a member of the firm of Burgess & Packard, has been very busy this year, building and repairing all kinds of yachts. Their 22-rater "Orestes" won a race in New York this fall from the best boats built in the last three years in New York, winning a \$500 cup, besides the championship of Massachusetts Bay in this class, and by which she won a leg of the Lipton Cup. One of their most notable previous successes was the "Mercedes," a 32-foot racing motor-boat, built three years ago, which made 25 1-2 miles an hour, with a 60 H. P. gasoline engine. She has won championships of the Eastern Yacht Club for the last three seasons, and last winter beat boats from all over the country in Florida. She is easily the fastest boat of her size in this country. Lately Burgess & Packard have developed their yacht yard, and

built the 103-foot passenger steamer "Pineland," running on a regular route near New Orleans. She is one of the first, if not the first, large passenger steamer to be propelled by gasolene. She has a 300 H. P. motor, and develops a speed of 19 miles an hour, carrying 250 passengers. She is divided into a great many water-tight compartments, and is unique in several particulars. She made the run from Marblehead to New Orleans with an average consumption of 1 1-5 gallons of gasolene per mile. The fishing schooner "Elizabeth Silsbee," built at Essex, from Burgess & Packard's design, is the largest, fastest, and most powerful fishing schooner on the Atlantic coast. She carries a crew of 32 men, and in addition to her sails is propelled by a 300 H. P. gasolene engine, capable of driving her 12 miles an hour without sails. She is considered one of the best sea boats in the fishing fleet, and has made some remarkable trips. The new Boston Floating Hospital ship was completed at Packard's yard last August, and is the first completely equipped floating hospital for young children in existence. The ship consists of a steel hull, 175 feet long by 45 feet wide, on which is a wooden superstructure of four decks, containing wards that will accommodate 125 beds for the patients. The wards are cooled by an elaborate system of refrigeration. The upper deck is devoted to day patients. Very many interesting problems had to be solved to adapt a hospital to its marine environment.

1899.

HERVEY J. SKINNER, *Sec.*, 93 Broad Street, Boston.

Earle B. Phelps, chemist and bacteriologist of the Sanitary Research Laboratory of the Institute, is also connected with the Water Resources Branch of the United States Geological Survey. Phelps is in charge of all the work now being carried on by the government on stream pollution. At present he is making investigations on the pollution of Chesapeake Bay, and also of the Providence River. Besides these he is working on experiments

in connection with sewage disposal in New Jersey, and with the utilization and disposal of waste liquors from sulphite pulp mills.—Burt R. Rickards, director of the bacteriological laboratory of the Boston Board of Health, has recently returned from a three weeks' trip to Mexico, where he attended the convention of the American Public Health Association. Rickards was elected secretary of the laboratory section of the Association. While in Mexico, he visited the rabies plant of the Pasteur Institute, and also inspected the water supply system, besides making a side-trip to the disinfecting station at Vera Cruz.—The secretary was hospitably entertained at the home of W. M. Corse at Detroit for several days during the fall. Corse is assistant superintendent at the works of the Detroit Lubricator Company, and is in immediate charge of the brass foundry. Corse is one of the few chemists in the brass industry, and his efficient work is shown by various improvements which he has made in foundry practice.—Haven Sawyer has left Gazelle, Cal., and is now at Custer, Ida. Sawyer is engaged in mining engineering.—Frank J. Huse was married on November 20, 1906, to Annie Louise Manter at Farmington, Me. They will make their home at Evanston, Ill.

1900.

R. WASTCOAT, *Sec.*, Dedham, Mass.

Wanted.—Items of interest about members of the class of 1900. Any member hearing about anything happening to any classmate, either in the way of marriage, good fortune, or otherwise, will please send an account of the whole occurrence to the secretary, and receive a reward some time.—The secretary, coming down Dartmouth Street from the Back Bay Station the Saturday before Christmas, spied a short fellow looming up ahead, who looked like Bill Stone; and Bill it proved to be. Bill was on for the holiday, and is now with the Water Supply Department in connection with New York City. He is located at Cole's Spring, opposite West Point, has

taken in all the football games played by the Cadets, and says it is a fine country up that way. He was formerly with the State Highway Commission, and changed to the Water Supply Department last spring.—Suter, who has recently returned from the Philippines, is also connected with the same department, and is located in the office at 299 Broadway. We understand that Suter had a very exciting time out in the Philippines, and the secretary hopes to have for the next number a short account of his experiences while there. The Bolo men attacked the town once where Suter was located, and the sprinting abilities that he used to display while in college served him to good purpose.—Searle, who was recently with the New York Central, has also passed the examinations, and has been appointed an assistant engineer in the same department.—Leeds, who came back to Tech and graduated this past year in Course I., is now located down in New Mexico, overseeing some government construction work.—Redman is now at work in connection with the Pennsylvania Tunnel under New York, and has left the government service, where he was connected with the irrigation work out West.—Steve Brown is also located in New York, being connected with the construction of the tunnel under Manhattan.—Joe Draper (IX.), Campbell, '01, and Chalmers did some climbing over the White Mountains this fall, climbing Lafayette, Lincoln, and Liberty Mountains, and scaring all the animals in that region with Tech yells. They slept in the open a number of nights; and Draper says that, after Chalmers got enough blankets to completely cover him, there was very little left for the rest of them.—H. E. Ashley (X.) is now located at Newell, W. Va. His former address was East Liverpool, Ohio.—Edward E. Bugbee, who has been teaching in the Iowa State College, Ames, Ia., is now located at the University of Washington, Seattle, Wash.—R. S. Blair (VI.), practising patent law in New York City, is living at 259 Woodland Avenue, New Rochelle, N.Y.—Robert H. Clary (III.), formerly located at Los Angeles, Cal., is now in Rosario, Sinaloa, Mex.—Warren A. Edson (II.), formerly located with the American Steel and Wire Company, is now at 221 Stiles Street, Elizabeth, N.J.—W. F. Jackson has changed

his address from Philadelphia, Pa., to 95 Randolph Street, Chicago, Ill.—H. A. Macpherson (XIII.) has been transferred from the Chicago office of the Western Electric Company to their office at Philadelphia, Pa., corner 11th and York Streets.—A. G. A. Schmidt (II.), who was with the Long Arm System Company, Cleveland, Ohio, has changed his address to the "Windy City," 1153 Addison Street, Chicago, Ill.—A. B. Briggs (I.), connected with the Boston & Albany headquarters at the South Station, was married quietly this fall, and is living out at Wollaston.

1901.

R. H. STEARNS, *Sec.*, 15 Beacon Street, Boston.

The secretary regrets that the space devoted to class news should contain a lament, but wishes to inform the class on one matter. Since taking the office of secretary, no records, accounts, or class list, have been received. The retiring secretary is dead to the mails, and an offer to call on him in Pittsfield brought no response.—E. B. Belcher is doubtless the busiest man in the class. He is exhibiting this January at the New York Auto Show a high-grade 4-cylinder motor, built by the Berkshire Auto Company, which he manages.—Allan Winter Rowe has returned from Germany, and is teaching chemistry at the Harvard Medical School. When we recall how well Rowe could talk at class meetings, when he had nothing to say, we must be confident of his success as an instructor after his fine preparation.—Mr. G. V. Sammet (V.) was married on Oct. 23, 1906, to Miss Harriet Fairbrother, of Pawtucket, R.I., and is living in Dorchester.—Mr. Bart. E. Schlesinger (V.) is making a trip around the world for the Merrimac Chemical Company, going via Hawaii, Australia, etc.—W. W. Walcott (IX.) is now a practising physician in Natick, Mass., after a three years' apprenticeship in the hospitals.—F. G. Clapp (XII.) is now in Minnesota, looking into the water resources of that State.—Ex-President Lawrence reports himself a father to a boy, and we wish every good fortune to the

man who led our class so ably for so many years.—The secretary expects to put out a general circular soon, and hopes the men will get in closer touch with him, to the general advantage of all.—William Warren Garrett died at San Antonio, Tex., January 14. He was born in Kentville, N.S., twenty-nine years ago. He came with his parents to Cambridge at the age of seven, and was educated there, graduating from the Cambridge Latin School in 1897 and from the Institute of Technology in 1901. On finishing at Technology, went to Montana, where he worked for two years in the smelter of the Boston & Montana Copper Company. In 1904 he became instructor of mining engineering at Rolla College, Rolla, Mo., remaining two years. Last summer, while travelling in Mexico, he was offered a position as assistant superintendent of the American Smelting & Receiving Company in Aguascalientes, Mex., and took up his duties there last September. He was married Jan. 26, 1905, to Ida Stevens, of Cambridge.

1902.

F. H. HUNTER, *Sec.*, 36 East 28th Street, New York City.

Two informal gatherings of the class have been held so far this winter, one in Boston on December 13, and one in New York on January 10. The meeting in Boston was held at the Tech Union, and was in charge of Assistant Secretary Nickerson, twenty-four men attending. After the dinner the evening was passed with stories and songs, and a general good time enjoyed. Those attending were E. S. Baker, Bates, Borden, C. H. Boardman, Jr., Collier, A. W. Crowell, Currey, H. H. Davis, Everett, S. A. Gardner, Jr., George, Hammond, Hooker, Lewis, Marvin, Nickerson, Patch, Ritchie, J. W. Smith, Stillings, Stover, Vaughan, Wemyss, Whittet. It is proposed to hold a theatre party later in the season. The gathering in New York was the first ever held outside of Boston, but from the interest of those present it will not be the last. The dinner was held at Mouquin's on Thurs-

day, January 10. Mr. John M. Bruce, vice-president of Tucker & Vinton, was the guest of the evening, and gave a very interesting talk on "The Business Side of Engineering." Although the short notice given prevented some men from attending, the evening was a highly successful one, and the cheers given, before the party broke up, for M. I. T. and for '02, closed the best dinner any class has ever held in New York City. Among those present were C. B. Allen, Annett, Brainerd, Franklin, A. E. Hemsen, Hunter, B. G. Philbrick, J. Philbrick, and Place.—H. H. Saylor was married on November 27 to Miss M. Helen Miller, of Philadelphia. They are living at the Palmer House, East Orange, N.J. Saylor left the *Architectural Review* some months ago, and is located with Doubleday, Page & Co., where he is conducting the architectural department of *Country Life*.—Farmer married Miss Capen, daughter of the late President Capen of Tufts College, in November. Mr. and Mrs. Farmer are living at 34 Rangeley Street, Winchester, Mass.—The second generation is on the increase, Albert E. Lombard, Jr., first seeing light on November 25. We trust that the family tradition will hold, and that about 1924 we shall read of his election as president of the Freshman Class at Tech.—C. B. Allen is also enrolled among our "proud and happy fathers," Miss Margaret Marie Allen having arrived safely on December 18. Allen is located with the Marine District, N.Y., N.H. & H. R.R., with headquarters at New Rochelle, N.Y. Address, 30 Colonial Place.—E. S. Baker is with the American Telephone & Telegraph Company, 125 Milk Street, Boston. His work takes him to many points in the West on conduit layouts, two of his recent trips having been to Idaho and St. Louis.—Hunter has left the Underwriters' Engineering & Construction Company.—Burdick's address is 3 Brownell Avenue, Hartford, Conn.—Matthies is manager at Berlin for Zwietusch & Co., the German representatives of the Western Electric Company. His address is Salzufer 7, Charlottenburg, Germany.—Seabury is with the Board of Water Supply, Brown's Station, N.Y.—A. E. Hansen is with Williams, Proctor & Potts, sanitary engineers, Room 1702, 17 Battery Place, New York City.—

Blodgett is with the McGraw Publishing Company of New York. His home address is 891 St. John's Place, Brooklyn.—H. E. Bartlett's address is 797 Prospect Place, Brooklyn.—B. G. and J. Philbrick are living at 119 Montague Street, Brooklyn.—F. B. Galaher is in Dallas, Tex., for a short stay.—Ames has moved to Dayton, Ohio, 490 Forest Avenue.—Childs is now located in Lee, Mass.—McCarthy is at Good Springs, Lincoln County, Nev.—Clifford B. Clapp is assistant librarian at Harvard College. He was married last fall, and is living at 951 Massachusetts Avenue, Cambridge.—Reynolds has moved to Waterbury, Conn., where he is located with the Bristol Company.—Currey has left the Draper Company, and is now located in Readville, Mass.—Pember has left Buffalo to take the position of chief architect with the South & Western Railroad, with headquarters at Johnson City, Tenn.—Miss Culver has become Mrs. Krueger, and is living at 18 Rugby Road, Schenectady, N.Y.—Curtiss is with the Juniata Hydro Electric Company, Perry Building, Philadelphia, Pa.—Archie Gardner is at Charleston, S.C. Address, care Carolina Yacht Club.—Geromanus is teaching the sciences in Malden (Mass.) High School.—MacNaughton's address is 309 Lumber Exchange Building, Portland, Ore.—Marsh is instructor at the Iowa State College, Ames, Ia.—The items in the October REVIEW concerning Professor W. H. Whitcomb and Herbert E. Raymond should have been under the class of 1903 instead of under 1902.

1903.

WALTER H. ADAMS, *Sec.*, Polytechnic Institute, Brooklyn, N.Y.

Since the first of the year two deaths have been recorded. On June 17 Manson died at Martinez, Ariz., after an operation for appendicitis. Although he graduated with 1904, he considered himself a member of 1903. As an undergraduate, he was prominent in athletics. After graduation he taught for a year at the Colorado School of Mines, and then went into practical work.

In the fall of 1905 he became mine foreman for the Rincon Mines Company at Martinez, and in the spring he was made superintendent. The following resolutions were sent to his parents:—

Whereas the hand of Divine Providence has taken from us one of our number, Gyula Bennett Manson, in whom we have lost a beloved friend and a faithful classmate, be it

Resolved, That we, the class of 1903, Massachusetts Institute of Technology, express deep sorrow at the loss we have sustained,—the loss of one who by his sincerity and kind-heartedness, as well as by his noble character and manly qualities, has endeared himself to all who knew him. That we desire to extend to his family our heartfelt sympathy in their bereavement. And also be it

Resolved, That a copy of these resolutions be sent to the family of the departed, that they be placed upon the records of the class of 1903, and that they be published in the TECHNOLOGY REVIEW.

(Signed) R. H. HOWES, *President*,
 W. H. ADAMS, *Secretary*,
 H. A. STILES,
 K. W. ENDRES,
For the Class.

—On August 11 W. W. Burnham died at Wilmington, S.C., after two months' illness, of typhoid fever. As an undergraduate, he was prominent in class affairs. After graduation he was with the Massachusetts State Board of Health for a year. The next year he was with the United States Geological Survey on irrigation work. After that he was with Hugh McRae & Co., of Wilmington, and at his death was their chief engineer. He was married March 6, 1906, to Miss Ella Cate, of Malden, Mass. The following resolutions were sent to his wife—

Whereas the hand of Divine Providence has taken from us one of our number, William Winslow Burnham, in whom we have lost a beloved friend and a faithful classmate, be it

Resolved, That we, the class of 1903, Massachusetts Institute of Technology, express deep sorrow at the loss we have sustained,—the loss of one who, by his sincerity and kind-heartedness, as well as by his noble

character and manly qualities, has endeared himself to all who knew him. That we desire to extend to his family our heartfelt sympathy in their bereavement. And also be it

Resolved, That a copy of these resolutions be sent to the family of the departed, that they be placed upon the records of the class of 1903, and that they be published in the TECHNOLOGY REVIEW.

(Signed) R. H. HOWES, *President*,
W. H. ADAMS, *Secretary*,
E. E. LOCKRIDGE,
For the Class.

—A reunion was held in New York on November 30. Chase, H. Crosby, Howes, Joyce, and the secretary were present. Owing to the small number who attended, no speaker was provided; and we merely had dinner at the Hotel Roversi, and talked over old times. Three members of the class have gone into business for themselves. Aldrich is in the gas engine business, under the firm name of C. S. Aldrich & Co., with an office at 7 Commercial Wharf, Boston, Mass. They do a general business, selling engines, sundries, and repairs.—Bridges is a member of the firm of J. O. DeWolf & Co., mechanical, electrical, and mill engineers. Their office is 159 Devonshire Street, Boston, Mass.—Atwood is a member of the firm of Atwood & McManus, box manufacturers, in Chelsea, Mass.—Loughlin received his Ph.D. degree last June from Yale, and is now instructor in geology at M. I. T.—Tolman has been awarded a Dalton Fellowship, and is studying at the Institute for his Ph.D. degree. He has been granted \$300 from the C. M. Warren Fund of the American Academy of Arts and Sciences, to enable him to construct what will probably be the most powerful centrifugal machine ever made for experimental purposes, to be used in connection with an investigation of the electromotive force produced at the two ends of a rapidly rotating solution of any ionized substance.—Newman's address is 175 Mt. Auburn Street, Cambridge, Mass. He is engineer with Ransome Smith Company, contractors, and is working on the United Shoe Machinery Company's plant at Beverly, Mass.—The following

changes of address have been received: C. H. Avery, 26 Chestnut Street, North Adams, Mass.; Chase, 45 West 128th Street, New York; Goodwin, 318 Dwight Building, Kansas City, Mo.; Hunter, 6354 Ellis Avenue, Chicago, Ill.; Pearson, 80 Willow Street, Brooklyn, N.Y.

1904.

CURRIER LANG, *Sec.*, Michigan Central Depot, Detroit, Mich.

During the past summer the class was honored in having the degree of Ph.D. conferred upon two of its members, and it is not too late even now to throw our chests a little further into the breeze on account of it.—Kalmus and Comstock, of Course VIII., who have been abroad studying on fellowships, captured the honors; Kalmus is back at Tech in the Research Laboratory, and Comstock is studying with J. J. Thompson at Cambridge University, England.—W. J. Gill is now in Boston with the American Telephone & Telegraph Company, in their electrical engineering department.—A. W. Bartlett is in Columbus, Ohio, as engineer for the American Water Softener Company (Brunn Löwener System).—In October the wedding of Merton L. Emerson to Miss Frances Dike took place at Christ's Church, Quincy, Mass. R. A. Wentworth and C. Lang of the class were present at the ceremony. The Episcopal service, with a surpliced choir, was used, and was very pretty. After a trip, Mr. and Mrs. Emerson returned to Braintree to keep house.—Preston M. Smith has lately moved to Detroit, to take a position with the Capitol Heater Company.

1905.

R. H. W. LORD, *Sec.*, 248 Tremont Street, Newton, Mass.

In the last number of the REVIEW we asked for opinions regarding the triennial scheme. We had one reply, and are much disengaged at the lack of interest in an event which is very impor-

tant to our class. The man who did write brought out a good point, that many of us have friends in other classes who would not be in Boston except in 1909, and, as a young engineer can rarely get off for more than two weeks in the year, he would think a long while before he used the week in the second year for a trip to Boston, were the two reunions held.—All the crowd has left the Lackawanna Company now, as retired steel magnates.—Coffin is now on insurance inspection in the Boston Bureau of Insurance Inspection.—Charlie Dean is in Pittsburg, representing the Buffalo Forge Company, and Jim Lambie is doing concrete work around Pittsburg.—Poole is with the Bryant Electric Company in Bridgeport.—Thomas and Darling are also in Bridgeport. They seem to think that it is quite a town.—Abbott was home for Christmas, and while here called on the vice-secretary. He is in Houghton, Mich., as engineer for one of the Stone & Webster companies, and says, as far as he can find out, Lummie has dropped out of existence.—Heine Lewis was in Boston at the same time from Toronto, where he is with the Giant Manufacturing Company, makers of paints, varnishes, etc.—Harrie Whitney has just returned from Cuba, where he was investigating a stone quarry, to be opened up for concrete works. He is now, as for the last two years, engineer of sewers for the city of Beverly, and has managed to spend \$200,000 for them in the last eight months.—In June the plant of the Eastern Dynamite Company at Barksdale, Wis., blew up, killing the superintendent and two men. Dan Harrington and Elmer Wiggins came through unhurt. Every door and window within a radius of five miles was blown in, and it was a miracle that the loss of life was not greater.—The first meeting of the Boston 1905 Club was held on December 4. Seventeen men met for dinner at the Tech Club. After dinner each man told what he had done since leaving Tech, and ended in a spirited debate between Charlie Boggs and Pink Fisher on whether or not a man could make money and still be honest. The meetings will be held the second Tuesday in each month. Any one wishing to join will notify G. B. Perkins.—Following are some changes in addresses recently received by the secretary: R. W.

Senger, Cananea Club, Cananea, Senora, Mex.; George B. Jones, 1226 16th Street, N.W., Washington, D.C., assistant examiner, United States Patent Office.; F. P. Poole, 1465 Fairfield Avenue, Bridgeport, Conn.—The men in the Patent Office at Washington have the special lines, as follows: Ammen, steam engineering; Barrows, fire-proofing; Crosby, automatic tools; Guibord, lubricants; Gammons, pneumatics; Jones, electric lighting; Kenway, optics; Whitney, hoisting.—Blair is with Howson & Howson, patent attorneys.—Grove Marcy has left Buffalo, and is now back in Boston.—Dick Senger writes:—

If I were to tell you the history of my life since leaving Tech, I would still be writing this time to-morrow. So I will simply tell you something about life here. Cananea is very little different from any of the Southern Arizona camps. In fact, the country looks the same. There are, of course, more Mexicans and Chinese and fewer gringoes here than across the line in Arizona. Excluding the dogs and burros, there are twenty thousand inhabitants. Of these there are at least twenty-five hundred gringoes. The Mexicans and Chinks look to be about equally divided. The town and suburbs wander up hill, down gulch, for about nine miles. The architecture varies from thatched dug-outs to three-story brick company houses. Life here is no wilder than in the tamest parts of Colorado. Once in a while the Mexicans get knifing each other, or gringoes shoot rather promiscuously. The riots on June 1 might have happened anywhere. They certainly were exciting. The camp, strange as it may seem, was caught practically unprepared. Every available gun was put into the hands of Americans by company officials. We did all we could to assist the Mexican authorities, who were too weak at the time to handle the situation alone. For forty-eight hours we protected company property, and stood guard on the concentrated camps of American women and children. Not until the Mexican "rurales" and infantry arrived on the scene—two days after the first excitement—could we rest with ease. My military training in Tech aided me greatly in carrying a broken-down shot-gun, with one hammer gone and the other loose. If I had had occasion to fire, I think I would have suffered more than my opponent. I could have used my gun as a club, however. Several strange things happened during the riots. Two prominent Americans were most brutally murdered in defending company property. About twenty Mex-

icans were killed by a dozen gringoes during a clash, when about fifteen hundred Mexicans attempted to force their way where they were not wanted. Since the riots, Cananea has had an efficient garrison. Everything has been disgustingly orderly. Ladies' tea-fights and dances (full dress, if you please, and this in the "wilds of Mexico") continue in full force.

We have a fine club here, which would do justice to a place more highly civilized. This does much to keep fellows here.

My chief excitement, aside from horseback riding, is trying to talk graceful Spanish to some very good-looking señoritas. My breaks must be terrific, but they are too polite to show it. According to them (the national fault is to rave about every one), my accent is good and grammar perfect, while I am dead sure that the former is barbarous, and the latter not at all. The future tense insists on sliding in where others should be, etc.

Last Sunday, while out riding, I was gracefully pitched from my horse, and in falling received a thump from my horse's hoof in my left thigh. Most Mexicans would have stopped and apologized, but the Mexican horse ran down the road, and waited for me to hop after him.

This is enough foolishness. It seems like several geological epochs since I have seen the fellows.

—The following is from G. B. Jones:—

In reply to yorz, asking for your attenshun to the fact that, being now an employee of Unkle Sam, I am expected to use simplifyd spelng. The M. I. T. has a larg and very actif representashun in Washington.

The society holds semi-monthly informal dinners at the University Club, therby keeping well in tuch with each other and with the Institute. The report of the secretary for the year just past shoz an average attencanc at thez dinners of nine. On Wednesday, December 12, waz held the annual dinner of the society, at which about forty men turnd up.

Professor R. S. Woodward, president of the Carnegie Institushun, spok of the increasing importance of applied science in the general field of educashun, and was given a very cordial welkum. He was to have been folowd by Mr. J. Knox Taylor, '79, Supervising Arkitekt of the Treasury Department, who waz unfortunately called out of the city at the last minet.

Accordingly, Professor Woodward waz folowd by Mr. Dougherty, '97, who referd to the varius posishuns of eminence and responsibility held by Tek men thruout the country.

Professor S. H. Woodbridge of the Fakulty folowd with a very inter-

esting diskushun of the present situashun and needs of the Institute; and thruout his addres of over an hour he waz folowd with the closest attenshun. He, in turn, was folowd by Dr. Pressey, '96, who spok brefly in favor of a broader training for Tek men, and at the conclushun of whos words the meeting waz adjurnd.

Yorz,

G. B. JONZ.

—Arthur J. Manson writes:—

At last I can give you some news. As you wrote, our apprentice course is nearly ended, and we will soon begin to split up. Already two have left, Atwood and Winship. Atwood has taken a position in Chili with Mr. J. K. Robinson, of New York, who is the South American representative of the Westinghouse Electric Company and also agent for other leading manufacturing concerns. He sailed from New York for Iquique on October 31. J. K. Robinson has been, and is, building small power plants in Chili for the mining of nitre, which is the sole product of the northern part of Chili. These plants are owned by Englishmen. Atwood's first duty is to go from one plant to another, and give each a thorough inspection and make what repairs are needed. While at a power plant, he will live with the owner. This inspection will last a few months, and then he will start on construction work. Winship took a position with the Westinghouse Electric Company in the railway office, beginning November 1. The latter part of the month he was sent to Long Island to be present during a test which the Pennsylvania Railroad is making on one of their electric locomotives built by the Electric Company. From Long Island he will go to New York to help on the electrification of the New York, New Haven & Hartford Railroad.

—George I. Rhodes writes:—

I dropped in to see "Bush" White the other day, and found him almost buried in coal dust. He is working for a consulting engineer, C. B. Jacobs, and has full charge of the laboratory. He seems quite satisfied with the job, and he says that his work is quite varied. At present he is working on a scheme to extract an excess of sulphur from coal. A few days later I dropped in to see Frank Payne at the Otis Elevator Company. He likes his job pretty well, but is anxious to get out of New York. Carl Graesser is working for a jewelry manufacturing concern in Wallingford, Conn., and likes his job very much. Schmeisser has left New

York for a pleasure trip to Europe for the summer. He expects to visit quite a number of works of engineering interest.

I have no more news about '05 men, but Ayer, '04, has gone to work for the government at the Charleston (S.C.) Navy Yard. I have no particulars as to the nature of the work, except that the government contemplates installing a modern high-tension system there, and that Ayer is connected with the work in some way. I have heard from Damon once, but he was not settled then.

I have moved more than once since I came to New York, and now I am living with Mr. Ricker, the electrical superintendent of our company, and Mr. Armstrong, who has charge of the transmission department of the New York Central. A portion of the time there will also be a general electric engineer, who has charge of their experimental track at Schenectady. You see that I ought to have a good chance to gather a few points by having such close contact with engineers of considerable experience. This arrangement is only for the summer, while Mr. Ricker's wife is away; and in the fall I expect to move again, and, if everything goes well, I shall probably live with Whitaker and a couple more men, if we can get them.

A bunch of '06 men have come to New York, and had sense enough to get together beforehand and decide to live together. I haven't been to see them yet, but I expect to do so some time this week.—(Dec. 16, 1906.) Since I wrote you last, I have been doing lots of moving. I have changed my room several times for all kinds of reasons, and I can tell you it was a mean life to lead. I felt dissatisfied with everything from myself up. About a month ago, however, I had the chance to come into the Tech Club to live, and I did so. I have been mighty glad of it ever since, for I feel now that I am at last living. I have for a room-mate Barlow, '05, who is one of the engineers on this new water supply scheme for New York. Barlow likes his work very much, for a large part of it is study and design.

We had a very successful smoker here at the club last night. There were about thirty men to dinner, and quite as many more to the smoker proper. Professor Richards, of Columbia, Tech, '85, gave us a very interesting illustrated talk on "Art and Industry in the Orient." Three or four other men spoke on various matters pertaining to the club. After the speaking, the crowd gathered about the piano and sang Tech songs until a late hour.

Among those present was Professor Prescott, of Tech. There were a

few '05 men present. Jimmy DeMallie was here, feeling just about as usual. Married life appears not to have changed him much. Jack Dunn was also here. As I told you, he had to leave New York for the summer on account of his health, but is now back at the old stand with Westinghouse, Church, Kerr & Co., looking about the same as usual. William N. Turner was here. He spent the summer building a railroad somewhere down in Virginia, and came back to New York in the fall, wearing a "beaut" of a mustache and a skin about the color of a negro's. Three months in New York, however, have caused him to lose both his color and his mustache. He is now working for the New York Edison Company as a structural draughtsman.

Besides Barlow and me, there were no other '05 men present, although Gerry and Parker, who are working on an experimental tunnel for the Pennsylvania Railroad, said they were coming. I did manage, however, to get word of a couple more fellows. Klahr, who used Charlie Cross's private staircase, had to leave New York awhile ago on account of serious illness, and enter a sanatorium somewhere up State. He was doing very well with Westinghouse, Church, Kerr & Co.; and it is a shame that he should have to leave. Schmeisser is back in New York after a summer in Europe, working for George Ginns, consulting engineer, in the Maritime Building, 12 Bridge Street. I have not seen him yet, but I have no doubt that he enjoyed his trip to Europe very much. Bushnell is in New York now, but have not seen him yet. I don't know where to find him, or I would have tried to get him out last night to the smoker. I saw Charlie Mayer at the club a couple of weeks ago, but he didn't have much news. Of the other fellows in New York I have neither seen nor heard anything for so long that I have completely lost track of them.

I have not changed my job yet, although I have been at times sorely tempted to do so. I probably will not change just yet awhile, for I have a couple of very interesting jobs on hand, which will take me some time to complete, and which I am anxious to do. Just now I am trying to make an electrolyte survey of a portion of New York fed by our lines.

By the way, there is one '05 man in New York whom I completely overlooked when I began to write. That is Chesterman. He has been down here for a couple of months, and will probably be here until January. He is doing some special work in telephony, and is working pretty hard. He was sick, or he would have been present at the smoker. He has been living out in Montclair, N.J., with Whitaker, '04, so I haven't seen much of him.

—From Perk we have:—

In connection with the work for the Boston Club, I heard from N. A. Richards, '05. He has been in the Boston office of Purdy & Henderson, architects, but has recently been transferred to the New York office of the same firm; and his address is now 78 Fifth Avenue, New York City.

Daniel P. Pousland, ex-'05, is on installation and inspection work for the Lowell Electric Light Corporation, a Stone & Webster plant.

Alden Merrill is a chemist for the Coe Brass Company in Torrington, Conn. Alden's address is 74 Litchfield Street, Torrington, Conn.

—Henry Hoffman Kennedy, '05 (IV.), writes me as follows:—

I am now located in Philadelphia, in the office of John P. B. Sinkler, and am getting on very well, on the whole, I think. My visions of fame and fortune have lost some of their gay tints they had while at Tech, but I have no cause to grumble at real life. I find Philadelphia also very pleasant; that is, the life, not the climate.

Kennedy's address is 322 South 11th Street, Philadelphia.—Bill Tufts writes:—

John Ayer (I.) is still in Germany. Address, 30 Ausbergerstrasse, Berlin W. He says that, if the language was as easy to master as the beer, we would all be Dutch. J. E. Barlow (I.) has left the Charles River Basin Commission. He took a recent exam. for position of assistant engineer with the Board of Water Supply, New York. Came fourth out of 150 men. He is now in the New York office. R. Kibbey (III.) has left his first love, mining, and taken up architecture. Is now of the class of 1909. Address, 285 Newbury Street, Boston. L. J. Killion (I.) left L. F. Shoemaker & Co. this fall, and is now with H. P. Converse & Co., 120 Milk Street, Boston. H. M. Lynde (I.) is with Factory Mutual Fire Insurance Companies, inspection department, Boston. He graduated last year from Brooklyn Polytechnic. J. H. McManus (XI.) is with the Board of Water Supply, New York, and is stationed at West Hurley, N.Y. He had temporary position with the board last summer. O. Q. Merrill (I.) blew in here this fall on the way to his home in Maine. Left his position with the University of California, and is now with the Southern Pacific as hydro-electrical engineer. His principal work now is investigating power-plant sites. S. P. intends to electrify the feeders to the main line, and perhaps

some of the mountain divisions. Merrill was in the "quake." The following will explain itself: Altoona, Pa., Nov. 29, 1906 Miss Jessie Ethel Rudisill was married to Mr. H. C. Mitchell (I.), a promising young graduate of Massachusetts Institute of Technology. Mitch. had good cause to give thanks that day. He dropped in to-day, and is looking fine. Mitchell has been running a preliminary reconnaissance for a railroad in Ontario. It is to run toward Hudson Bay. Says that there has been but one white man over the ground before them, and he was lost. Mitchell is going to spend his honeymoon in West Buxton, Me., working for J. W. White & Co. on an hydro-electric power plant. D. H. Nicholson (I.) married November 7 to Carrie May Cox at Roxbury, Mass. He is still with Charles River Basin Commission. W. S. Richmond (I.) was at the "Stute" last spring for about two months as assistant in civil engineering department. He left in the summer to go with the United States Engineer on lake survey. L. E. Robbe (I.) is now with the Pennsylvania Tunnels in New York. Address, 343 East 33d Street, New York. Says he met L. H. Parker (I.) and Gerry (II.) in the tunnel. H. R. Robbins (I.) is returning from Manchuria by way of Suez Canal. His father was in here the other day, and said that Robbins had been all over Manchuria, was shot at by the Russians, and had many adventures. F. E. Kingsman (I.) is with the Reclamation Service on the Uncompaghre project, River Portal, Col. W. E. Simpson (I.) is civil engineer for an architect in San Antonia, Tex. W. Tufts is running an information bureau at Room 42, Engineering A. Small notes gratefully received, larger in proportion. R. E. Wise (I.) was working on the State line for the Harbor and Land Commission, when he fell into a ravine. Was laid up month with a bad foot. Is now with the Charles River Basin Commission. Mitchell told me he got a strike from you for a dollar. But was three weeks from civilization, so he did not send it. I saw R. N. Turner the other day. He is at Boston University Law School. Likes it all right.

—From the '05 Quakers we have:—

Tuesday before Thanksgiving Billy Keen entertained the '05 Quakers and also all the '06 men whose addresses in Philadelphia were given in the REVIEW. Seven '05 men and six '06 men were present, and we had a rousing good time, ending the evening by a corking spread. Billy has thoroughly established his reputation as an entertainer, and we were all sorry when the time to break up came. During the evening a commit-

tee was appointed to make arrangements for a joint '05 and '06 dinner during January, and I may add that the arrangements are progressing satisfactorily. Congratulations are in order. On the 12th of December the engagement was announced of William H. Keen to Miss Annie M. Sargeant, both of Malden, Mass. Hooray for Billy! Sid Cole has secured leave of absence from his company for several weeks, during which time he is going to see how he likes the gas business in Waukegan, Ill. However, I fear the leave of absence will be a permanent one, for I doubt if he ever returns, worse luck. Joe Brown, who is with the New York office of the Sullivan Machine Company, has been in the city several times, and has passed a couple of evenings with us. In fact, he was one of the '05 men present at Billy's the other evening. Killion, who was sent to Washington, D.C., by his firm, returned to this city for a short time, and then left to accept a position in Boston. We shall miss our musician. Cole, Eickler, and Bill Gerry will all be in or around Boston for the Christmas holidays.

1906.

THOMAS L. HINCKLEY, *Sec.*, 745 Osceola Ave., St. Paul, Minn.
A. T. HEYWOOD, *Resident Sec.*, Mass. Inst. of Technology, Boston.

Since the last issue of the REVIEW, the address and occupation of a large additional quota of members has been determined:—

John W. Anderson (II.), P.O. Box 806, Sparrows Point, Md., in the marine department of the Maryland Steel Company.

Lyman Anson (XIII.), 33 St. James Avenue, Boston, Mass., with Submarine Signal Company.

Herbert S. Bailey (V.), Box 102, Agricultural College, Mich., instructor in chemistry at Michigan Agricultural College.

Edwin B. Bartlett (VI.), 4926 Linden Avenue, Norwood, Ohio, apprentice course of Bullock Electric Manufacturing Company, Cincinnati, Ohio.

Andrew L. Bell (XIII.), care Superintendent, Motive Power and Machinery, Culebra, Canal Zone, Panama.

Stuart W. Benson (X.), 46 Chestnut Avenue, Trenton N.J., draughtsman, Trenton Iron Company, The Industrial Laboratories.

Fred H. Bentley (II.), 32 South Second Street, Elizabeth, N.J., inspector of contract work for refinery of the United States Metals Refining Company, Chrome, N.J.

Howard C. Blake (I.) is reported to have gone to San Francisco, to return later. Mail address, 184 West Canton Street, Boston, Mass.

Mildred E. Blodgett (XII.), 9 Batavia Street, Boston, Mass., student, M. I. T. XII.

Robert H. Booth (II.), Linwood Station, Pa., equipment man, American Telephone & Telegraph Company, Philadelphia, Pa.

A. L. Boynton (II.), of 88 Chatham Street, Worcester, Mass., is with the American Steel & Wire Company.

Howard Hayes Brown (XIII.) in the autumn was at 3436 Forbes Street, Pittsburg, Pa., learning the practical side of boiler-making from work in shops of R. Munroe & Sons, West Point Boiler Works, Pittsburg. He was previously with the Lake Erie Boiler Works, Buffalo, N.Y., and in October became editor of *The Boiler Maker* (formerly *Motive Power*), which is published monthly at 17 Battery Place, New York City. His present mail address is Penacook, N.H. We have heard he was reporting a boiler-makers' convention in Pittsburg.

Walter Stanley Brown (III.), 417 Boston Building, Denver, Col., of Wiard & Brown, mining engineers.

James M. Buchanan (III.), 208 West 82d Street, New York, N.Y., engineering department, New York & New Jersey Tel. Company, New York City.

George H. Buckingham (IV.), 138 Newbury Street, Boston, Mass., graduate student at M. I. T.

Harry W. Baker (III.) reported to have come East from Montana.

George W. Burpee (I.), P.O. Box 476, Louisville, Ky., draughtsman in civil engineering department, L. & N. R.R. Chief engineer's office, L. & N. R.R., Louisville, Ky.

William J. Cady (VI.), 435 Greenwood Avenue, Richmond Hill, Long Island, N.Y., with Holophane Glass Company, 15 E. 32d Street, New York, N.Y.

Louis R. Chadwick (XIII.), 9 Green Street, Claremont, N.H., with Sullivan Machinery Company, Claremont, N.H.

Edward Chandler (XIII.), 43 Mill Street, Grand Rapids, Mich., erecting superintendent for A. S. Nichols & Co., lumber and veneer dryers, 909 Tremont Building, Boston, Mass.

Arthur N. Cheney (II.), 7650 Bond Avenue, South Chicago, Ill., with steam engineering department of Illinois Steel Company's "South Works," South Chicago, Ill.

Avedis Melkon Chuchian (I.), 82 Fifth Street, Chelsea, Mass., student at M. I. T.

Walter B. Clifford (II.), 94 Sumner Street, Fitchburg, Mass., manufacturing, Simonds Manufacturing Company, Fitchburg, Mass.

Paul N. Critchlow (I.), care American Bridge Company, Ambridge, Pa., draughtsman with American Bridge Company, Ambridge, Pa.

John P. Davis (Sp.), 35 Huntington Street, Lowell, Mass., salesman with Gardner & Co., cotton goods converters, 95 Bedford Street, Boston, Mass.

William J. Deavitt (III.), care Canadian Copper Company, Crean Hill Mines, Ont., Canada, with Canadian Copper Company.

Colby Dill (X.), 460 Commonwealth Avenue, Newton Centre, Mass., student.

Theodore Dissel (II.), 701 James Street, Syracuse, N.Y., draughtsman, Consolidated Car Heating Company, Albany, N.Y.

Thomas F. Dorsey (I.), M. I. T., student, Course I.

William F. Englis (XIII.), 327 West 86th Street, New York, N.Y., with W. & A. Fletcher Company, Hoboken, N.J.

Thomas W. Faber (II.), 49 Carson Avenue, Newburg, N.Y., draughtsman, Gregg Company, Limited, Newburg, N.Y.

William F. Farley (I.), Lincoln Street, Waltham, Mass., with the Ambur-sen Hydraulic Construction Company, 176 Federal Street, Boston, Mass.

Robert D. Farrington (I.), Bellevue Street, West Roxbury, Mass., student, Harvard Law School, Cambridge, Mass.

Arthur E. Feeley (II.), Pittsfield, Mass., banker, Third National Bank.

Andrew Fisher, Jr. (X.), 180 East River Street, Hyde Park, Mass., sales-man with A. Klipstein & Co., dyestuffs and chemicals, 283-285 Con-gress Street, Boston, Mass.

Harry A. Frame (III.), M. I. T., Boston, Mass., student (III.), '07.

Frank W. Friend (IV.), M. I. T., Boston, Mass., student, IV., '07.

Herman T. Gammons (II.), United States Patent Office, Washington, D.C., assistant examiner United States Patent Office, Washington, D.C.

Robert S. Gardner (XIII.), Technology Club, Boston, Mass., in turbine testing department of General Electric Company, West Lynn, Mass.

Samuel E. Gideon (IV.), M. I. T., Boston, Mass., instructor in drawing, M. I. T.

James N. Gladding (II.), 606 John Street, Albuquerque, N.Mex., city engineer of Albuquerque, N.Mex.

Samuel A. Greeley (XI.), care Hering & Fuller, 170 Broadway, New York, N.Y., assistant engineer with Rudolph Hering & George W. Fuller, 170 Broadway, New York, N.Y.

Edward C. Groesbeck (V.), 528 West 124th Street, New York, N.Y., private assistant to Professor Henry M. Howe of Department of Metal-lurgy, Columbia University, 27 West 73d Street, New York, N.Y.

Birendra C. Gupta (VI.), 203 West Newton Street, Boston, Mass., student at M. I. T. (VI.).

Richard F. Hammatt (VII.), Forest Service, Washington, D.C., forest assistant, United States Forest Service, now on Cascade Forest Reserve, headquarters, Roseburg, Ore.

William A. Hardy (II.), Room 322, United States Patent Office, Wash-ington, D.C., assistant examiner, United States Patent Office.

Charles W. Hawkes (II.), 15 Euclid Street, Dorchester, Mass., with New England Telephone & Telegraph Company, 101 Milk Street, Boston, Mass.

Alfred R. Heckman (V.), Lake City, Col., assayer.

Herman C. Henrici (II.), 1013 Park Avenue, Kansas City, Mo., assistant construction engineer, Missouri & Kansas Telephone Company, Kansas City, Mo.

Royal R. Heuter (II.), Prairie Avenue, Auburndale, Mass., assistant in mechanical engineering at the Institute.

Guy Hill (VIII.), 41 High Street, Everett, Mass., experimental engineer National Electric Signalling Company, Brant Rock, Mass.

Harold G. Hixon (III.), Y. M. C. A. Building, Iola, Kan., chemist with United Zinc and Chemical Company, Iola, Kan.

George F. Hobson (XI.), 125 East 28th Street, New York, N.Y., with P., N.Y. & L.I. R.R. Company (East River Division), engineers' office, Front Street, Long Island City.

Herbert P. Hollnagel (VIII.), 186 Hamilton Street, Dorchester, Mass., assistant in electro-chemistry, M. I. T., Boston.

Helen R. Hosmer (V.), 1716 Union Street, Schenectady, N.Y., chemist, research laboratory, General Electric Company, Schenectady, N.Y.

Charles E. Hovey, 84 State Street, Portsmouth, N.H., midshipman, United States Navy.

Charles M. Hutchins (III.), 232 West Newton Street, Boston, Mass., student at M. I. T. in Course III.

Frank R. Ingalsbe (III.), Lehigh University, South Bethlehem, Pa., instructor in Department of Geology, Lehigh University, South Bethlehem, Pa.

Hans O. C. Isenberg (II.), Technische Hochschule, Charlottenburg, Germany, studying gas engines.

Ralph T. C. Jackson (IV.), 57 Oak Square Avenue, Brighton, Mass., graduate student, M. I. T.

Gilman B. Joslin (XIII.), 46 Burroughs Street, Jamaica Plain, Mass., heating engineering with James Tucker & Sons Company, 97 High Street, Boston, Mass.

Rinker Kibbey (III.), M. I. T., Boston, Mass., has been travelling in the West, visiting and working in various mining districts, now returned to M. I. T. to study in Course IV.

William J. Knapp (II.) is reported with Westinghouse Electric & Manufacturing Company, Pittsburg, Pa.

Edmund K. Lawrence (I.), 242 Newbury Street, Boston, Mass., student, M. I. T.

Hunter U. Light (II.), 40 West 30th Street, Bayonne, N.J., one of assistant engineers in mechanical department of M. H. Treadwell & Co., 95-97 Liberty Street, New York, N.Y., contracting engineers.

Fred C. Lutze (IV.), 14 Chelsea Street, East Boston, Mass., architectural draughtsman with A. H. Gould, architect, 17 Milk Street, Boston, Mass.

Elmer D. McCain (I.), Union Bank Building, Winnipeg, Canada, on

reinforced concrete construction, with George H. Archibald & Co., engineers and contractors, Winnipeg, Canada.

John H. McManus (XI.), assistant engineer, New York Board of Water Supply.

Albert P. Mansfield (IV.), Wakefield, Mass., was with Ransome & Smith, 11 Broadway, New York City, until September, 1906, when he entered M. I. T., '07.

Anthony P. Mathesius (XIII.), 237 Beacon Street, Boston, Mass., student at M. I. T.

William E. H. Mathison (X. and III.), 105 North Pennsylvania Avenue, Webb City, Mo., employed by "Chapman & Lennan," who are mine operators in Webb City, Mo.

Edward L. Mayberry (IV.), 1054 East Ocean Avenue, Long Beach, Cal., architectural engineer, 727 H. W. Hellman Building, Los Angeles, Cal.

Henry S. Mears (III.), Bisbee, Ariz., miner, Bisbee, Ariz.

Alden Merrill (IV.), 74 Litchfield Street, Torrington, Conn., assistant chemist, Coe Brass Manufacturing Company, Torrington, Conn.

John E. L. Monaghan (I.), 319 Fourth Street, South Boston, Mass., civil engineer, now located at 30 Tremont Street, Boston, Mass.

Walter N. Munroe (VI.), with Dallas Electric Lighting & Power Company, engineering department, 358 Commerce Street, Dallas, Tex.

Floyd A. Naramore (XIII.), 39 St. Botolph Street, Boston, Mass., student, M. I. T., in Course IV. Naramore is president of the Architectural Society.

Arthur Neale (V.), M. I. T., Boston, Mass., assistant, Laboratory of Technical Analysis, M. I. T.

William Neilson (III.), Oasis, Mono County, Cal., assayer, "Lookout Mine," which is located in Esmeralda County, Nevada.

Henry H. Nelson, Jr. (II.), 16 Myrtle Street, Jamaica Plain, Mass., heating and ventilating draughtsman with French & Hubbard, New Albany Bldg., Beach Street, Boston, Mass.

James B. L. Orme (V.), 18 St. James Avenue, Boston, Mass., chemist with R. S. Weston, sanitary engineer, 14 Beacon Street, Boston, Mass.

Louie A. Parker (IV.), 1255 West 6th Street, Los Angeles, Cal., chief engineer for Charles F. Whittlesey & Co., architects, Los Angeles.

Galt F. Parsons (VI.), in office of the manager Terre Haute Traction & Light Company, Terre Haute, Ind.

Ralph R. Patch (XI.), 28 Lincoln Street, Stoneham, Mass., with State Board of Health until November 1; now assistant superintendent, E. L. Patch Company, manufacturing chemists and pharmacists, Stoneham, Mass.

Jane B. Patten (VII.), 100 Gainsborough Street, Boston, Mass., instructor in biology, Simmons College, Boston, Mass.

Henry R. Patterson (II.), 8 Montrose Street, Roxbury, Mass., assistant in mechanical engineering, M. I. T.

Park V. Perkins, 52 Broadway, New York, N.Y., mining broker, operating in Southern Nevada.

Herbert S. Philbrick (II.), Waterville, Me., draughtsman with Lombard Log Hauler Company, Waterville, Me.

Burnell Poole (VI.), The Arlington, Montague Street, New York, N.Y., engineer with the New York Telephone Company, 15 Dey Street, New York, N.Y.

Willis Ranney (I.), Technology Chambers, Boston, Mass., student, M. I. T.

Edward M. Read, Jr. (I.), 4811 Regent Street, Philadelphia, Pa., res. engineer on construction for the John N. Allison Company, 1628 Land Title Building, Philadelphia, Pa.

James Reed, Jr. (XIII.), 311 Beacon Street, Boston, Mass., graduate XIII.A.

Atwood E. Rippey (III.), care C. H. Rippey, Conrad Building, San Diego, Cal., gem mining, San Diego, Cal.

Henry E. K. Ruppel (V.), chemist with Gillette Safety Razor Company, First and Colton Street, Boston, Mass.

Philip B. Sadtler (X.), Mechanicsville, N.Y., chemical engineer, West Virginia Pulp & Paper Company, Mechanicsville, N.Y.

Charles Saville (XI.), Room 140, State House, Boston, Mass., sanitary engineer, assistant in the engineering department, Massachusetts State Board of Health.

Paul S. Schmidt (II.), Allendale Terrace, East Cleveland, Ohio, civil engineer with the Courtney Engineering Company, 406 American Trust Building, Cleveland, Ohio.

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Ernest M. Smith (II.), mechanical engineer with Solvay Process Company, Syracuse, N.Y.

Carleton M. Soule (VI.), Hanover, N.H., graduated from Dartmouth College, '06, now student at Thayer School of Civil Engineering.

Percy Staples (I.), 215 Newbury Street, Boston, Mass., with Stone & Webster, Boston, Mass.

Edward T. Steel (VI.), in Lighting Department, Ponce Railway & Light Company, Ponce, Porto Rico.

Edgar C. Steinharter (VII.), Technology Chambers, Boston, Mass., student, Harvard Medical School.

Robert K. Stoddard (VI.), North Hanover, Mass., in electrical engineering department, Boston Elevated Railway.

Harold W. Streeter (XI.), 150 West Newton Street, Boston, Mass., student, Course XI., M. I. T.

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William F. Turnbull (II.), 35 Rutland Square, Boston, Mass., student, M. I. T.

Jean P. Varian (III.), 253 Lincoln Avenue, Denver, Col.

Ishwar Das Varshnei, Sikandra Rau, District Aligarh, U. P., India, consulting chemist and engineer. Has established a glass factory at Aligarh, India, and is operating successfully.

Ernest A. Walter (IV.), 92 Gainsborough Street, Boston, Mass., graduate student, Course IV., M. I. T.

Samuel L. Ware (XIII.), 103 Thurston Street, Somerville, Mass., in structural department with H. P. Converse & Co., 120 Milk Street, Boston, Mass.

Clarke E. Warren (II.), 803 College Avenue, Beloit, Wis., with Fairbanks-Morse Manufacturing Company, Beloit, Wis.

Thomas Gray Webber (II.), 179 Lafayette Street, Salem, Mass., doing some special work in electricity at Institute.

Mildred F. Wheeler (XIII.), London House, Mt. Hermon, Mass., teaching.

James L. Wick, Jr. (II.), 753 Wick Avenue, Youngstown, Ohio, assistant to master mechanic, Youngstown Sheet & Tube Company, Youngstown, Ohio.

Sylvanus W. Wilder (II.), 283 Ellison Street, Paterson, N.J., mechanical engineer, Dolphin Jute Mills, Paterson, N.J.

Nahum C. Willey (XIII.), 200 10th Avenue, N., Seattle, Wash., draughtsman with the Moran Shipbuilding Company, Seattle, Wash.

Charles F. Willis (III.), Cooney, Socorro County, N.M., assayer and surveyor for the Enterprise Mining Company, Cooney, N.M.

George M. Winne (II.), 709 Marietta Avenue, Milwaukee, Wis.

John T. Wrinkle (IV.), M. I. T., Boston, Mass., graduate student, M. I. T.

Harold Eugene Young (VI.), 41 Rutland Square, Boston, Mass., engineering department of the American Telephone & Telegraph Company, 125 Milk Street, Boston, Mass.

A geographical register has been prepared with the idea of assisting every member who has thus far been heard from to locate and get in touch with his neighbors. The members are urged to meet together in small or large groups. Those who are expecting to make trips are urged to look up in advance their classmates located along their itinerary, and try to get in touch with them.

In using this register, the list of changes of addresses (to be found on another page) should also be consulted, since the latter contains changes which arrived too late for entry in the register of this issue.

ALABAMA

Edward P. Cutter

Ensley

ARIZONA

Henry S. Mears
Harold C. Plummer
R. B. Sarratea

Bisbee
Globe, Gila County
Clifton

BRAZIL

Jorge Lage

Ilha do Viana, Rio Janeiro

CALIFORNIA

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John M. Morris
William Neilson
Louie A. Parker
Atwood E. Rippey
Clarence H. Sutherland

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Oasis, Mono County
1255 West 6th Street, Los Angeles
Care C. H. Rippey, Conrad Building, San Diego
Westport

CANADA

William J. Deavitt
Fay W. Libbey
Elmer D. McCain

Union Bank Building, care George H. Archibald & Co., Winnipeg

COLORADO

Walter S. Brown
Willis S. Caypless
Alfred R. Heckman
Harry C. Merriam
Russell P. Raynolds

417 Boston Building, Denver
1035 Logan Avenue, Denver
Lake City
201 East Orinon Avenue, Pueblo
670 Third Avenue, Durango

William A. Sheldon
 Louis B. Tuckerman
 Jean P. Varian
 Arthur E. Wells
 Sylvester C. Wolfe

Care Taylor Park Mining Company, Dorchester
 1365 Ogden Street, Denver
 253 Lincoln Avenue, Denver
 Leadville
 Sand's Camp, Montrose

CONNECTICUT

William W. Gaylord
 Nathan J. Gibbs
 Frederick B. Guest,
 Walter A. Hotchkiss
 Alden Merrill
 James S. Pitkin
 Edward M. Richardson

Torrington
 25 Slater Avenue, Norwich
 375 Maple Street, Bridgeport
 698 Kossuth Street, Bridgeport
 74 Litchfield Street, Torrington
 P.O. Box 1051, New Haven
 Lime Rock

CUBA

Nestor M. Seiglie

Sagua la Grande

DISTRICT OF COLUMBIA

Herman T. Gammons
 William A. Hardy
 Charles T. Leeds
 George C. Noble
 Edward L. Wilson

United States Patent Office
 322 United States Patent Office
 Washington Barracks
 Treasury Department
 904 East Capitol Street

ENGLAND

Charles G. Loring

Care Baring Brothers, London

FLORIDA

Lewis A. Thompson

Pensacola

FRANCE

Paul F. Mann

Care American Express Company, Paris

GEORGIA

George R. Shingler, Jr.

Emory College, Oxford

GERMANY

Hans O. C. Isenberg

Technische Hochschule, Charlottenburg

IDAHO

Edward M. Eliot

Post Falls

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 Chester A. Hoefer
 Milton T. Lightner
 Herbert J. Mann
 Maurice C. Thompkins
 James R. Williams

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 Highland Park
 751 Pinegrove Avenue, Chicago
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 196 South 18th Street, Quincy

INDIA.

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Sikandra Rau, District Aligarh, U. P.

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 Franklin J. Van Hook
 Lawrence B. Webster

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 Care Terre Haute Traction & Light Co., Terre Haute
 Care Big Four Railroad Company, Wabash
 Marion

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Harold G. Hixon

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Laurence G. Blodgett

Slidell

MAINE

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 Harry V. Fletcher
 Herbert S. Philbrick
 Howard P. Shaw

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 Waterville
 Buckfield

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 Joseph T. Lawton
 Louis H. Maxfield
 Walter Smith
 Arthur S. Thomas

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 Care Joseph Thomas & Son, Baltimore
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 Lyman Anson
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George H. Buckingham	138 Newbury Street, Boston
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Henry P. Carruth	Care American Writing Paper Company, Holyoke
Anna M. Cederholm	65 Marlboro Street, Belmont
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Prescott J. Clapp	169 Boston Street, Upham's Corner
Lewis C. Clarke, Jr.	264 Green Street, Cambridge
Ralph S. Clarke	35 Rockwell Street, Dorchester
Walter B. Clifford	94 Sumner Street, Fitchburg
Maxwell A. Coe	43 Ashland Street, Medford
Harry H. Cook,	27 Lamartine Street, Jamaica Plain
Raymond E. Cranston	425 Quincy Street, Dorchester
E. H. Daniels	Natick
Henry E. Darling	125 Milk Street, Boston
John P. Davis	35 Huntington Street, Lowell
Leon H. Davis	25 Union Park, Boston
Walter D. Davol	19 Bartlett Street, Charlestown
Edward H. Dean	38 General Cobb Street, Taunton
Walter G. de Steiguer	12 Newbury Street, Boston
Colby Dill	460 Commonwealth Avenue, Newton Centre
Frank E. Dixon	25 Hulbert Street, Roxbury
Thomas F. Dorsey	M. I. T., Boston
Alice B. Douglas	La Fayette Avenue, Hingham
Ralph L. Dyer	11 Grove Street, Winchester
Frederic E. Earle	10 Downer Street, Dorchester
William F. Eastwood	155 Ruggles Street, Boston
Harold C. Elliott	11 Ruskin Street, West Roxbury
Carleton M. Emerson	72 Mt. Vernon Avenue, Braintree
Edward B. Evans	116 Cedar Street, Malden

Nugent Fallon	489 Walnut Avenue, Jamaica Plain
William F. Farley	176 Federal Street, Boston
Robert D. Farrington	Bellevue Street, West Roxbury
Arthur E. Feeley	Pittsfield
Andrew Fisher, Jr.	180 East River Street, Hyde Park
Harry A. Frame	M. I. T., Boston
Frank W. Friend	M. I. T., Boston
Floyd M. Fuller	M. I. T., Boston
Robert S. Gardner	Technology Club, Boston
Samuel E. Gideon	M. I. T., Boston
Henry A. Ginsburg	19 Clinton Street, Cambridge
Wilford D. Gray	21 Chestnut Street, Woburn
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Perley K. Griffin	86 Walnut Street, Neponset
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George R. Guernsey	27 Eaton Street, Winchester
Birendra C. Gupta	203 West Newton Street, Boston
Frank Haley	9 Adams Court, Lynn
Henry B. Hallowell	112 School Street, Belmont
Charles E. Hamilton	27 Endicott Avenue, Beachmont
Charles W. Hawkes	101 Milk Street, Boston
Marden W. Hayward	233 Goffe Street, Quincy
Royal R. Heuter	M. I. T., Boston
Angelo T. Heywood	M. I. T., Boston
Guy Hill	41 High Street, Everett
Frederick W. Hinds	61 Kirkstall Road, Newtonville
Herbert P. Hollnagel	M. I. T., Boston
William W. Hosmer	63 Ridge Avenue, Athol
Robert N. Hoyt	40 Oak Street, Hyde Park
Charles M. Hutchins	M. I. T., Boston
Ralph H. Jackson	335 Centre Street, Jamaica Plain
Ralph T. C. Jackson	57 Oak Square Avenue, Brighton
Arthur H. Jansson	Mt. Pleasant Avenue, Malden
Charles E. Johnson	119 Trenton Street, East Boston
Joseph W. Johnson	30 Summer Street, Dorchester
Gilman B. Joslin	46 Burroughs Street, Jamaica Plain
Charles L. B. Kasson	10 Thetford Avenue, Dorchester Centre
Burton W. Kendall	M. I. T., Boston
Andrew Kerr	317 Forest Street, Medford
Rinker Kibbey	M. I. T., Boston
James W. Kidder	22 Brook St., Somerville
Ralph F. Knight	49 Church Street, Hudson
Frederic S. Krag	Care B. F. Sturtevant Company, Boston
Abraham Lampie	28 Greenwood Street, Dorchester
Clarence E. Lasher	19 Bedford Street, Lynn
Edmund K. Lawrence	242 Newbury Street, Boston

Ralph C. Lawrence
 Waldron G. Lawrence
 Dan A. Loomis
 Forrest W. Lord
 Harold Lord
 William J. Lambert
 Fred C. Lutze
 Claude S. McGinnis
 Richard V. McKay, Jr.
 Joseph N. McKernan
 Eleanor M. Manning
 Albert P. Mansfield
 Edward L. Manson
 Anthony P. Mathesius
 Louis F. Mesmer
 Winthrop N. Messenger
 John E. L. Monaghan
 James G. Moore
 Charles W. Mowry
 Harold K. Munroe
 Floyd A. Naramore
 Samuel A. Nash
 Arthur Neale
 Henry H. Nelson
 Sherley P. Newton
 Henry G. Nicholas
 Utar J. Nicholas
 John F. Norton
 Henry L. Oaks
 James B. L. Orme
 Alphonsus O'Farrell
 Rowland E. Page
 R. R. Patch
 Jane B. Patten
 Henry R. Patterson
 Fred S. Phelps
 Willis Ranney
 James Reed, Jr.
 Charles D. Richardson
 John A. Root
 Robert J. Ross
 Edward B. Rowe
 Wier L. Rowell
 Mary J. Ruggles
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 30 Auburn Street, Malden
 P.O. Box 287, Walpole
 14 Chelsea Street, East Boston
 M. I. T., Boston
 East Milton
 75 Gainsboro Street, Boston
 26 Beacon Hill Avenue, Lynn
 Wakefield
 M. I. T., Boston
 237 Beacon Street, Boston
 242 Newbury Street, Boston
 283 Vinton Street, Melrose Highlands
 319 Fourth Street, South Boston
 M. I. T., Boston
 425 Quincy Street, Dorchester
 43 Warren Avenue, Woburn
 29 St. Botolph Street, Boston
 77 Toxteth Street, Brookline
 M. I. T., Boston
 16 Myrtle Street, Jamaica Plain
 M. I. T., Boston
 Back Bay P.O., Boston
 263 Newbury Street, Boston
 132 Woodland Road, Auburndale
 South Framingham
 18 St. James Avenue, Boston
 82 Dustin Street, Brighton
 79 Worcester Street, Boston
 28 Lincoln Street, Stoneham
 Simmons College, Boston
 M. I. T., Boston
 88 Chatham Street, Worcester
 Technology Chambers, Boston
 311 Beacon Street, Boston
 48 Highland Avenue, Cambridge
 Technology Chambers, Boston
 86 Clifton Street, Belmont
 9 St. James Avenue, Boston
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Ralph Shurtleff	57 Prospect Street, Taunton
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Robert R. Stoddard	North Hanover
Harold W. Streeter	150 West Newton Street, Boston
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William J. Walsh	5 Woodville Street, Roxbury
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Arthur P. Watt	176 Forest Street, Winchester
Thomas G. Webber	179 Lafayette Street, Salem
Mildred F. Wheeler	Mt. Hermon
George F. White	Franklin Park
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Frederick H. Willcox	M. I. T., Boston
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George C. Young	10 Rawson Street, Dorchester
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MEXICO

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 Robert Hursh, care American Smelting & Refining Company,
 Albert L. Stephens Apartado 101, Monterey, N.L.
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 Edward Chandler 43 Mills Street, Grand Rapids
 George F. Hunt Ann Arbor
 Roger L. Rice St. Clair

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 Frank Logan 1318 Vine Place, Minneapolis
 John E. Murphy Bovey

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Charles H. Shapleigh Vicksburg
 John C. Wilson Pass Christian

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 Herman C. Henrici 1013 Park Avenue, Kansas City
 Alfred W. Hertz 2121 Benton Boulevard, Kansas City
 James H. Polhemus Carthage
 William E. H. Mathison 105 North Pennsylvania Avenue, Webb City
 Clifford R. Wilfley Maryville, Nodaway County (temporarily)

MONTANA

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 Guy H. Ruggles Care B. & M. Co., Great Falls

NEW HAMPSHIRE

Frederick R. Batchelder	Hampton
David Bloom	Care Claremont Paper Company, Claremont
Louis P. Chadwick	9 Green Street, Claremont
Robert S. Clark	9 Green Street, Claremont
Alexander Hicks	45 Prospect St., Claremont
Charles E. Hovey	84 State Street, Portsmouth
Harry L. Lewenberg	P.O. Box 634, Berlin
Le Roy H. Shipman	P.O. Box 1210, Berlin
Carleton M. Soule	Hanover

NEW JERSEY

Stuart W. Benson
Fred H. Bentley
Stewart E. Coey
Hunter U. Light
Sylvanus W. Wilder

NEW MEXICO

James N. Gladding
Charles F. Willis

NEW YORK

Howard P. Adams	202 West 44th Street, New York City
Simeon C. Allen	American Fruit Product Company, Rochester
Howard P. Barnes	White Plains
Louis L. B. Booth	Poughkeepsie
Charles F. Breitzke	78 Fisher Avenue, White Plains
Harry H. Browne	17 Battery Place, New York City
Charles R. Burleigh	741 Broadway, Albany
James M. Buchanan	208 West 82d Street, New York City
George Burnap	Westbury Station, Long Island
William J. Cady	435 Greenwood Avenue, Richmond Hill, Long Island
Harold V. O. Coes	Care Western Electric Company, 463 West Street, New York City
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Roland P. Davis	42 Broadway, New York City
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Sylvester B. Eagan	993 Delaware Avenue, Buffalo
David D. Eames	15½ Orchard Street, Auburn
William F. Englis	327 West 80th Street, New York City
Thomas W. Faber	49 Carson Avenue, Newburg
William C. Furer	573 Second Street, Brooklyn
George C. Furness	523 River Street, Hoboken
Samuel A. Greeley	170 Broadway, New York City
Edward C. Groesbeck	Care Professor Howe, Columbia University, New York City
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George F. Hobson	125 East 28th Street, New York City
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Henry S. Hubbell	83-85 Washington Street, New York City
Andrew H. Keleher	55 Duane Street, New York City
Patrick J. Kennedy, Jr.	221 West 43d Street, New York City
Howard W. Key	773 State Street, Schenectady
William H. Lincoln	125 East 28th Street, New York City
Frederick C. Line	50 Rowley Street, Rochester

Henry D. Loring	61 21st Street, Whitestone, New York City
James R. McClintock	170 Broadway, New York City
John H. McManus	White Plains
Charles B. Morey	101 Depew Avenue, Buffalo
Harold Morse	392 Fourth Street, Brooklyn
Park V. Perkins	52 Broadway, New York City
Edward B. Pollister	225 West 45th Street, New York City
Burnell Poole	15 Dey Street, New York City
Phillip B. Sadtler	Mechanicsville
Arthur L. Sherman	4 Grand Street, White Plains
Ernest M. Smith	Solvay Process Company, Syracuse
Lemuel D. Smith	Care Winthrop Press, New York City
Ralph N. Soule	215 West 23d Street, New York City
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Arthur T. Trowbridge	555 Warren Street, Hudson
Walter B. Wyman	Crown Point, Essex County

OHIO

Edwin B. Bartlett	4926 Linden Avenue, Norwood [Cincinnati]
Earl G. Christy	2924 Collingwood Avenue, Toledo
Robert H. Doepeke	3595 Washington Avenue, Cincinnati
Joseph H. Teemster, Jr.	Glendale
Charles E. Fogg	1122 Union Trust Building, Cincinnati
Michael J. Gibbons, Jr.	239 North Main Street, Dayton
Thomas L. Hinckley	Care State Board of Health, Columbus
Bruce R. Honeyman	Care Cristo Hospital, Cincinnati
Karl F. Juengling	461 Dunham Avenue, Cleveland
William I. Lourie	144 West Rayen Avenue, Youngstown
Oscar S. Pulman, Jr.	1791 117th Street, Cleveland
Paul S. Schmidt	406 American Trust Building, Cleveland
Guy C. Simpson	451 Wilson Ave., Columbus
Lambert Thorp	512 Prospect Place, Avondale, Cincinnati
James L. Wick, Jr.	753 Wick Avenue, Youngstown

OREGON

Richard F. Hammatt	Cascade Forest Reserve at Roseburg
--------------------	------------------------------------

PANAMA

Andrew L. Bell	Culebra, Canal Zone
Frank A. Browne	Culebra, Canal Zone
Sidney L. Davis	Cristobal, Canal Zone
Robert J. Lyons	Culebra, Canal Zone

PENNSYLVANIA

Charles T. Bartlett	Box 392, Crafton
Robert H. Booth	Linwood Station

Eugene P. Chase	817 Walnut Street, Wilkinsburg
Paul N. Critchlow	Care American Bridge Company, Ambridge
George L. Davenport, Jr.	1113 Union Station, Pittsburgh
David C. Davis	6700 North 8th Street, Oak Lane, Philadelphia
Herbert W. Dean	6700 North 8th Street, Oak Lane, Philadelphia
John J. Donovan	4924 Centre Avenue, Pittsburgh
Carroll A. Farwell	1013 Pennsylvania Avenue, Pittsburgh
Leon E. Hirt	55 Water Street, Pittsburgh
Frank R. Ingalsbe	Lehigh University, South Bethlehem
Isa W. Kahn	Care Homestead Steel Works, Munhall
William J. Knapp	
	Care Westinghouse Electrical & Manufacturing Company, Pittsburgh
Clifford Lynde	Union Station, Oil City
Harvey B. Orcutt	235 Fourth Avenue, Phoenixville
Clarence B. Powell	3411 Walnut Street, Philadelphia
Edward M. Read	4811 Regent Street, Philadelphia
Philip B. Stanley	411 McNair Street, Wilkinsburg
Allyn C. Taylor	6700 North 8th Street, Oak Lane, Philadelphia
DeWitt M. Taylor	Blairsville
Percy E. Tillson	6700 North 8th Street, Oak Lane, Philadelphia
Nathaniel A. White	1515 Girard Avenue, Philadelphia

PORTO RICO

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Herminio Yrizarry	Box 82, San German

RHODE ISLAND

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Shields Burr	Woonsocket
Walter C. Spencer	162 Peace Street, Providence
Frederick B. Thurber	229 Waterman Street, Providence

SOUTH DAKOTA

Chadwell S. Pierce	Bovine (temporarily)
Herbert L. Williams	Lead

TEXAS

Clarence M. Cockrell	Denton
Walter N. Monroe	358 Commerce Street, Dallas
Wendell P. Terrell	Prairie View
Charles F. W. Wetterer	Wilson Building, Dallas

UTAH

Raymond J. Barber	Bingham Cañon
Clarence E. Carter	Care William Ashton, chief engineer, Salt Lake City

VIRGINIA

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Wilfred N. Oliver

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WASHINGTON

Ogden R. Adams
Quincy P. Emery
Carl C. Stevens
Nahum C. Willey

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Ritzville
200 Tenth Avenue, N., Seattle

WISCONSIN

Edwin D. A. Frank
Clark E. Warren
George M. Winne

2300 Grand Avenue, Milwaukee
803 College Avenue, Beloit
709 Marietta Avenue, Milwaukee

The following *changes of address* have been noted since October;

Fred R. Batchelder (VI.), 817 Walnut Street, Wilkinsburg, Pa., apprentice, Westinghouse Electric & Manufacturing Company.

In the October REVIEW, through an error, Frank A. Benham (I.), who is in the Engineering Department of the New England Telephone & Telegraph Company, at 104 Milk Street, Boston, Mass., was reported as being with the American Telegraph & Telephone Company at 125 Milk Street.

Laurence G. Blodgett (I.), Slidell, La.

Walter E. Chadbourne (XIII.), is no longer with the Edison Electrical Illuminating Company, but is working as surveyor and draughtsman in Plan Department, Factory Mutual Fire Insurance Company, 31 Milk Street, Boston, Mass. His mail address is still 41 Newport Street, Dorchester, Mass.

Harold V. O. Coes' mail address is 214 West 82d Street, New York, N.Y. David C. Davis (VI.) has very likely moved with the Philadelphia bunch from 6700 North 8th Street, Oak Lane, to 3411 Walnut Street, Philadelphia, Pa.

Herbert W. Dean, 3411 Walnut Street, Philadelphia, Pa. He and Davis are both in the Engineering Department of the Bell Telephone Company of Philadelphia, at 1633 Arch Street, Philadelphia, Pa.

John J. Donovan has gone from Pittsburg to New York, 174 West 109th Street, care of Gromer, New York City, and is building superintendent, with Ernest Flagg, 35 Wall Street, New York City.

Frederic E. Earle (II.), apprentice with Lumsden and Van Stone, Boston, Mass., now lives at 24 Leroy Street, Dorchester, Mass.

Edward B. Evans (IV.) is no longer with Purdy & Henderson, Boston. His address is 36 East 28th Street, New York, N.Y., and he is working as structural engineer with Underwriters' Engineering Company, 1170 Broadway, New York City.

William C. Furer (IV.), formerly with the American Bridge Company of New York City, is now draughtsman with (address) Department of Yards and Docks, United States Naval Station, Key West, Fla.

William W. Gaylord (II.), with American Brass Company, is at 120 Cook Street, Waterbury, Conn.

Charles E. Hamilton, 43 High Street, Charlestown Mass., with the American Telephone & Telegraph Company.

Elmer E. Harrington (III.), 518 Seventh Street, North, Great Falls, Mont., is still with the Boston and Montana Consolidated Copper and Silver Mining Company.

George M. Henderson (III.), formerly in Hibbing, Minn., now Box 54, Rhyolite, Nev., as engineer with Tramp Consolidated Mining Company, Rhyolite, Nev.

"Tommy" Holmes (III.), formerly in Jalisco, Mex., is now with the American Smelting & Refining Company, where "Al" Stephens (III.) is working. Address, Hotel Bellina.

Bruce R. Honeyman (IV.) has recovered from sickness, and is now with the Contracting Engineering Company, Tacoma, Wash. Mail address, 63 North 20th Street, Portland, Ore.

James A. Kane (XIII.), M. I. T., Boston, Mass., student.

Andrew H. Keleher (VI.), 365 West 23d Street, New York, N.Y., with the Electrical Department of the New York Edison Company.

Harold A. Kingsbury (X.), M. I. T., Boston, Mass., student.

Charles T. Leeds (I.), Fort Bayard, N.Mex., First Lieutenant, Corps of Engineers, United States Army.

Fay W. Libbey (III.), P.O. Box 139, Cobalt, Ontario, Canada.

Harold Lord (IV.), formerly with Eastern Expanded Metal Company, is now at the Light-house Depot, Tompkinsville, N.Y., as architectural and structural steel draughtsman, Light-house Service.

Richard V. McKay, Jr. (III.), who spent the summer abroad, is now assistant to both the superintendent and general manager of the Pennsylvania Steel Company. Address, Care of Pennsylvania Steel Company, Lebanon, Pa.

Joseph N. McKernan (I.), formerly draughtsman with Bangor & Aroostook Railroad, is now with the Engineering Department, New England Telephone & Telegraph Company, Boston. Address, 75 Gainsboro Street, Boston, Mass. He has been recently located on work in Haverhill, Mass.

Eleanor M. Manning is draughtsman, 93 Water Street, Boston, Mass. (until Jan. 1, 1907). Address, 26 Beacon Hill Avenue, Lynn, Mass.

Charles B. Morey (VIII.), formerly with the American Radiator Company is now assistant chemist with the Larkin Company, Buffalo. Address, 101 Depew Avenue, Buffalo, N.Y.

James H. Polhemus (III.), formerly with New Jersey Zinc Company, has gone to Carthage, Mo. Full address later. Letters will reach him via his home, 18 Moreland Avenue, Newton Centre, Mass.

Robert J. Ross (III.), of 86 Clifton Street, Belmont, Mass., is with H. R.

Buck, civil engineer, Hartford, Conn., working on Massachusetts-Connecticut State Line Survey.

Mary J. Ruggles (V.), formerly at Radcliffe, is now at 18 Rugby Road, Schenectady, N.Y., engaged as chemist at the Research Laboratory of the General Electric Company. Miss Ruggles and Miss Hosmer (V.) are two of a group of three Technology women at the General Electric Company's laboratories.

Roberto B. Sarratea (III.) has gone out to Clifton, Ariz., to work in mines. Nestor M. Seiglie (I.), of Sagua la Grande, Cuba, is with the Cuban Central Railway, Ltd.

Allyn C. Taylor (II.), with the Distribution Department, United Gas Improvement Company, has moved from Oak Lane to 3411 Walnut Street, Philadelphia, Pa.

The address of De Witt McC. Taylor (II.), given in the last REVIEW as Blairsville, Pa., should be Box 1, Black Lick, Pa.

Percy E. Tillson (VI.), of the Bell Telephone Company of Philadelphia, has moved with Taylor to 3411 Walnut Street, Philadelphia, Pa.

Walter H. Trask (II.) is now at 397 Warburton Avenue, Yonkers, N.Y., assisting inspector, Yonkers Power Station, N. Y. C. & H. R. R.R.

F. J. Van Hook (I.), formerly located at Wabash, Ind., is now draughtsman with the Charles River Dam Commission. Office, 367 Boylston Street, Boston. Residence, 40 Sherman Street, Roxbury, Mass.

Arthur E. Wells (III.), metallurgical chemist with the American Smelting & Refining Company, has transferred from Leadville, Col., to Murray Station, Salt Lake, Utah.

When Sylvester C. Wolfe (I.) was with the United States Reclamation Service in Colorado, he used to see Kriegsman (I.), '05, frequently. Now Wolfe is structural draughtsman for the Builders' Iron & Steel Company, Bridge Street, Cambridge, Mass. Residence, 138 Boston Avenue, West Medford, Mass.

The secretaries have gleaned a few notes on the activities and movements of the members of the class:

Barnes (I.), seems to have resigned himself very completely to the locality and atmosphere of White Plains.

C. T. Bartlett and C. A. Farwell, '06, found time during December to come out to Columbus, Ohio, and pay a short visit to Simpson and Hinckley, who are both located there. There were hardly enough present to paint the town a very deep shade of red. Both the visiting Pittsburgers had the good fortune to make the return train without any difficulty.

Charles F. Breitzke (XI.) visited Boston in the fall, and also came home for Christmas.

"Editor" Howard H. Brown (XIII.) was in Pittsburg, reporting a Boiler Maker Convention.

Charles R. Burleigh (II.) is mechanical engineer with the Consolidated Car Heating Company, Albany, N.Y. He is doing mostly electrical work. William J. Cady (VI.) visited Boston Christmas week.

Coey (VI.) runs over to Boston from New York now and then.

William Couper (I.) is reported with the Penn., N.Y. & L. I. R.R., at 125 East 34th Street, New York, N.Y.

H. C. Crowell, '03, of Salem, together with our "Schubert," George L. Davenport, Jr. (I.), furnish the music for the Panhandle crowd at Crafton, Pa.

Eliot (VI.) has been heard from out of the "Wild and Woolly." He reports fine scenery and vigorous work. Eliot is engaged on a water power development project.

C. A. Farwell (I.), who, with C. T. Bartlett (I.), is working for the Panhandle Railway, was back home for a week from Pittsburg. (See also C. T. Bartlett.) He sent us an account of the Pittsburg reunion.

Edwin D. A. Frank (II.) says that summer school in machine tools is not in it with a summer course in the foundry of the Allis-Chalmers Company.

George C. Furness (VIII.), who is engaged as instructor in physics at Stevens Institute of Technology, came up from Hoboken, N.J., on a two weeks' Christmas vacation to visit Boston and his home in Manchester, N.H.

Alfred W. Geist, Jr. (VI.), was seen by the resident secretary in New York, July, 1906, when his address was Hotel Manhattan, New York City. Present address not known. He is connected with an electrolytic refining company.

Michael J. Gibbons, Jr. (VI.), is busy out in Dayton, Ohio. He is well located as buyer for the plumbing and heating lines with his father, and is doing prosperously. Address 20 and 22 West Third Street, Dayton, Ohio.

"The engagement of Wallace Ralph Hall, of Newton Highlands, to Miss Edith A. Swett, of Newton Centre, Mass., was formally announced at a heart party given at her home Dec. 27, 1906. Mr. Hall graduated from Tech with the 1906 class in civil engineering, and has since been employed by the New York Contracting Company."

Late in the fall Elmer E. Harrington (III.) came East from Great Falls, Mont., to his home near Boston, bound "on an errand." When he called at the Institute, he appeared quite happy.

Among those who took advantage of the M. I. T. Summer School of Mining and Metallurgy, June-July, 1906, were Ralph Hayden, Marden W. Hayward, and Angelo T. Heywood, all Course III. During the remainder of the summer Hayden was engaged with Professor Richards at the Institute on United States Geological Survey work. During the first term he has been assistant in the Mining Department. On Jan. 14, 1907, he leaves Boston for Anaconda, Mont., where he will be assistant in the testing laboratory of the Anaconda Copper Mining Company. Hayward spent part of the summer in the Maine woods,

and returned to study at the Institute in the Geological Course. After the Summer School, Heywood was assistant for Professor Richards on private work at the Institute until September 1, when he began his present work as assistant to the Registrar, with location at the Information Desk, Rogers Building.

Thomas L. Hinckley (XI.) was out in St. Paul, his home, for a week's vacation at Christmas.

Leon E. Hirt (III.) made a couple of visits to Boston from Pittsburg in the fall.

Patrick J. Kennedy, Jr. (II.) was seen in Boston Christmas week.

Jorge Lage (II.), Ilha do Viana, Rio de Janeiro, Brazil. On Oct. 8, 1906, Lage was married to Mlle. Elisabeth Perrin, Châlon-sur-Saône, France.

Fay W. Libbey (III.) was seen in Boston about Christmas time.

Paul Lincoln (III.) is reported to have gone West last summer to work in a mining district.

During the latter part of November, William H. Lincoln (I.) visited Boston. He is with the Penn., N.Y. & L. I. R.R., engaged on freezing tests for tunnel work under the rivers. William Couper (I.) is with him. Lincoln also reports that George F. Hobson (XI.), with Albert F. Bancroft (III.), '07 (who played so well in Tech shows), are located at 22 Pearson Street, Long Island City, N.Y., on the Long Island end of the work.

A loyal voice comes up from Culebra, in the Canal Zone, Panama. Robert J. Lyons (XIII.) signs "1906 forever."

James R. McClintock (XI.) was in Pittsburg a short time ago on the business of his firm, Messrs. Hering & Fuller of New York.

Richard V. McKay (III.), now with the Pennsylvania Steel Company, visited his home in East Milton, Mass., during Christmas week.

Herbert J. Mann (II.) is reported to have eloped with "Begum's Daughter." We trust he will return the book to the General Library in due time.

John E. Murphy (III.), mining engineer with the Oliver Iron Mining Company, Bovey, Minn., has changed from the Holman Mine to the Arc-turus Mine.

"Dick" Polhemus (III.) visited home at Christmas week on his way from New Jersey to Missouri. He was looking very well.

From the *Tech*, Jan. 2, 1907: "The announcement of the engagement of James Reed, Jr., assistant naval constructor, United States Navy, attached to the Boston Navy Yard, and Miss Laura C. Maltby, of Jamestown, N.Y., has been made. Mr. Reed, in conjunction with his work at this place, is doing graduate work in naval architecture at Tech."

Guy C. Simpson (I.) after leaving school spent the first two months on a very interesting automobile trip through New England. On September 1 he started in with the Pennsylvania Railroad at Columbus, and is now doing construction and estimate work in connection with maintenance of way on the Indianapolis division.

Everett C. Stanton (VI.), who is in the students' course, Engineering Department of the New England Telephone & Telegraph Company, Boston, Mass., has been working in that part of New Hampshire south of Lake Winnepesaukee, and has also been at work in Worcester, Mass. Among the steps in the student course are: (1) shop work and repairs on small-size instruments; (2) construction on large scale, including either building or testing; (3) traffic work, which includes operating; future growth, etc.

Nat White (XIII.) is at the Cramps' shipyard in Philadelphia.

Edward L. Wilson (II.), 616 East Capitol Street, Washington, D.C., is draughtsman with S. Homer Woodbridge on heating and ventilating the National Museum. He has also been up to Syracuse, N.Y., doing inspection work on the Onondaga County Court and Power Houses, and was home for Christmas.

George C. Young (II.) is now superintending in water foundation work, Neponset Bridge, Neponset River, Mass.

The resident secretary wishes to acknowledge the aid from '06 men of the Civil Engineering Department of M. I. T. towards the preparation of the geographical register for this issue of the REVIEW.

The secretaries regret that lack of space in this number prevents the publication of letters received from P. B. Sadtler, "Bob" Hursh, W. P. Terrell, "Hank" Mears, "Wet," N. P. Gerhard, and "Bill" Deavitt.

Down in Pittsburg the fellows have got together well. Carroll A. Farwell writes:-

We had a very successful little reunion at Hotel Duquesne, Pittsburg, on the evening of Saturday, January 5. There were twenty-eight Tech men present: G. K. Newbury, '98; H. C. Crowell, '03; W. R. Davis, '03; W. H. Koppelman, '04; C. W. Babcock, '05; C. L. Dean, '05; E. B. Hill, '05; W. G. Housekeeper, '05; J. Davis, Jr., '05; H. C. Kendall, '05; E. N. Lyon, '05; A. J. Manson, '05; L. M. Pease, '05; W. F. Smart, '05; A. O. True, '05; W. Turner, '05; E. E. Woodbury, '05; F. R. Batchelder, '06; C. T. Bartlett, '06; S. T. Carr, '06; J. J. Cartagena, '06; E. P. Chase, '06; G. L. Davenport, Jr., '06; C. A. Farwell, '06; J. W. Kahn, '06; W. J. Knapp, '06; R. Seyms, '06; and P. B. Stanley, '06. No attempt was made to have it anything more than a reunion of the later graduates around Pittsburg. We expected G. C. Simpson, '06, from Columbus, Ohio, but for some reason he did not turn up.

After the dinner, Davenport, with a Tech Song Book, presided at the piano for a while, and later Crowell entertained us with various selections. After chatting awhile, Turner led a "We are happy," and the crowd broke

up. During the evening, Newbury, '98, Davis, '03, Koppelman, '04, Turner, '05, and Bartlett, '06, were elected a committee to confer with the Alumni Association here in Pittsburg, and to arrange for future meetings of a like nature. We have to thank Bartlett and Stanley, who arranged the dinner, for a very pleasant evening, and hope that the committee was not elected in vain.

The Income Fund, which has already begun to give to the Institute the aid which it is designed to afford, has been chiefly subscribed by the classes preceding 1906. The Income Fund Committee did not formally solicit our class for pledges to the fund, as its campaign was practically ended before our graduating. Many 1906 men have signified their wish to join the good work, and the Committee, learning this, has expressed its appreciation of this loyal spirit. It will gladly welcome subscriptions from 1906, and will co-operate with our secretaries in every way in securing from our class as adequate an expression of our desire to assist the Institute as our means permit.

The Income Fund, it will be remembered, was called into existence by the agitation against the proposed merger with Harvard two years ago, when it became necessary to prove that the Institute was financially able to meet all reasonable demands of the future. In June, 1906, the fund amounted to more than \$275,000. The wants which the fund was calculated to supply are very real and pressing. To borrow the words of the committee, they are:—

- 1st. Additional land and buildings.
- 2d. Money with which to pay such salaries as are necessary to command the services of the best men for the instructing staff.
- 3d. Additional laboratory equipment in practically every department.

The Institute needs all the financial aid available, and there is every reason for 1906 to do its share. Accordingly, if those men who feel they can afford it will please address either of the secretaries, they will be furnished with information, blanks, etc., by the Fund Committee.

It is a good cause, and every little helps.

It may have been remarked that the constitution, in so far as

it applies to the election of officers, has been allowed to lapse. This was done in order that the machinery of the class work after graduation might be gotten fairly under way before a change was made in organization.

To be loyal to the Institute, we must keep our class organization strong. To have a strong class organization requires the interest of the members. Members take interest only when something is being done by the class. No one cares to be busy unless there is some real work in sight and a definite, practical object to be gained. It is, therefore, evident that the problem of organization brings with it the question of what particular life-work our class proposes to take up for its alumni career. Before any change is made, the matter is open for general discussion. The secretaries wish that the members would write to them, and state their opinions on the subject.

Of the classes previous to 1906, some hold annual elections, others do not. Some elect their secretaries annually, others make no change. 1906 is the only class with a resident and non-resident secretary. Our class is large in number, reaching nearly 600. If it is to do anything or engage in any work, there must be a sufficient number of officers to serve the class efficiently. Any system of government should allow distribution of the work, so as to bear lightly on each officer. If no officer were unduly burdened, it would be possible to hold each one responsible for the performance of his proper duties. Each one could then do justice to the work allotted him.

We have ties of association and relations now existing between us all which make our class a well-fitted and valuable body to perform work. Our class organization should be such that, when the work presents itself to be done, it will not be a case of one or two members rising to the occasion, but of a sufficient number of officers being found in readiness to perform their parts.

Members are urged to give their attention to the above points.

BOOK REVIEWS

PRINCIPLES AND PRACTICE OF SURVEYING

The book on Plane Surveying published by Messrs. Breed and Hosmer of the Civil Engineering Department last year is an excellent example of a text-book which has been evolved from extended experience in teaching and in practical work combined. It is a rare thing, especially in civil engineering, to have a text-book prepared by men who have been teachers as well as practical civil engineers. We have text-books written by teachers whose lack of practical experience leads them to put much stress on problems and methods of work which practice has long discredited. We have the so-called "self-made" civil engineer issuing handbooks, full of rules of thumb and minute directions for very special work, without any proper explanation of the fundamental principles underlying the applied science. In haste to rush into print, it is quite common for new teachers to write text-books before they have been tried by the criticism of their pupils. The ideal method is to issue notes, have them corrected and criticised by the students through a period of several years. There is no criticism so searching as that which comes from the class-room. Both Mr. Breed and Mr. Hosmer have been teachers and practical surveyors and engineers ever since their graduation from the Institute. Their combined experience in practical work covers the entire field of surveying with the possible exception of practical mining work.

The use of fac-simile copies of actual field notes is an especially valuable feature of this book. I believe all the drawings in the book are fac-similes of pen drawings; it seems to me that this is an important item in conveying the idea of reality, and it is a great stimulus towards neatness of work. When a text-book is illustrated by engravings executed to a great extent mechanically, the student makes allowance for this fact, and never dreams of reaching the same excellence in his own work.

The arrangement of the chapters and the grouping of topics strike me as very suitable; and, while it differs from the generally accepted arrangement of a text-book on surveying, it is really in better sequence for study and reference.

The chapters relating to astronomical determinations and topographical surveying contain all that is necessary for the ordinary surveyor. It is possible, however, that a brief account of the methods of stadia measurements could profitably be added without increasing greatly the size of the book. The chapters on levelling and on transit work are eminently practical, and show extensive field experience. The chapter on plotting is new and complete. The standards of lettering and conventional signs are simple and effective.

On the whole, I think this is the best text-book on plane surveying in the market.

ALFRED E. BURTON,

Professor Topographical Engineering.

"TERRACES OF THE WEST RIVER, BRATTLEBORO, VT."

Proceedings of the Boston Society of Natural History. By ELIZABETH F. FISHER, M. I. T. '96, Associate Professor of Geology at Wellesley College.

This paper presents the results of a careful survey and study of an interesting succession of terraces formed, in no unusual way, by the meanderings of a stream during periods of erosion. This investigation was made attractive by a recent theory of Hugh Miller and more elaborately discussed by Professor W. M. Davis. The theory accounts for the wanderings of the rivers at successively lower and lower levels, the changes of direction being determined by rock ledges. It was one object of the survey to determine whether this was exemplified in the succession of terraces at Brattleboro, Vt., and the test has sustained the theory. In the process of terrace formation Miss Fisher observed that another action had taken place, not defined by the theory. This action has been called by Miss Fisher the *partition process* which is caused

at times by the division or partition of the stream into two or more courses and the production of an island between the branchings. The work may be carried so far as to produce a plain which Miss Fisher has called a *partition plain*, the development of which she has described. It is in this portion of her paper that the publication rises to the importance of a positive contribution to science, for it has not been so completely defined and thoroughly illustrated in other publications. It should be noticed that the careful survey with the transit was made by Miss Fisher personally, and this is well recorded in a map showing the river terraces at Brattleboro, with the outcrops of rock indicated upon it. This map is probably the most detailed and accurately constructed map that has been made of any location for the purpose of showing this phase of river action. She also gives eight plates representing different stages in the development of the terraces, and three photographic illustrations of the features described. The care and thoroughness with which this work has been done and the clearness of its presentation are such that the paper will have a standard value with all students of river terraces.